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ABSTRACT

The California Academic Partnership Program (called CAPP-Eisenhower in recognition of the act of Congress that funded the program) was established in 1983 to facilitate collaboration between secondary and postsecondary institutions. This volume, the program's final product, offers 16 papers in 3 sections, providing, respectively, highlights of the project's September 1990 "kick-off" conference, selected papers from the field, and case studies of the project's model partnerships. Following a foreword by J. Myron Atkin and a preface by Frank Young, Section I provides a summary of the conference and the following three conference papers: "Underrepresented Students: Our Diverse Population" (Eugene Garcia); "Academic and Corporate Partnerships in the 1990s" (Mark Edelstein); and "Academic, Business and Corporate Partnerships" (Joseph Oakley). Section II, "Key Aspects of Academic Partnerships," presents papers and commentary that consider academic collaboration under seven headings: Culture Gap, Educational Research, Business-School Collaboration, Teacher Education, Professional Development, Change, and Future. Papers are: "The Partnership Terrain" (Louis S. Albert); "School-University Collaboration: Why It's Multicultural Education" (Susan M. Brookhart and William E. Loadman); "Research and the Renewal of Education" (National Academy of Education); "What Business Can Do To Achieve Educational Change in a Community" (Frank Newman); "Business/School Partnerships: A Path to Effective School Restructuring" (Diana W. Rigden); "What College and University Leaders Can Do To Help Change Teacher Education" (Phyllis J. Edmundson); "What Business Leaders Can Do To Help Change Teacher Education" (Diana W. Rigden); "How Mathematics Content Courses Must Change in Light of Technology and the NCTM Curriculum Standards" (M. Montgomery and others); "Research on Professional Development Schools" (Jane A. Stallings and Theodore Kowalski); "Collaborative Professional Development: A Case Study on Teacher Professional Development Through School-College Collaboration" (Nancy E. Adelman); "The Rand Change Agent Study Revisited: Macro Perspectives and Micro Realities" (Milbrey W. McLaughlin); and "The Future of School-University Partnerships" (John I. Goodall and Kenneth A. Sirotnik). This section also includes an annotated list of selected readings. The final section headed "Case Studies CAPP's Model Partnership Projects," presents an action research component which examined the processes, impacts and outcomes within and across the five model partnerships included in the CAPP-Eisenhower project. This section also provides case studies and names and addresses of contact persons from each of the model partnerships. An afterword by Deborah Hancock concludes the volume. (JB)

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Beyond the Handshakes

An Examination of University–School Collaboration

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Editor

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Beyond the Handshakes

An Examination of University—School Collaboration

Thomas J. Karwin
Editor

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Foreword

J. Myron Atkin

Partnerships linking schools to other institutions in the community are an attractive and effective vehicle for improving the quality of public education. One of the clearest reasons for their popularity is that schools today do not themselves possess the human or physical resources needed to improve elementary and secondary education to the degree that is necessary and demanded. Nor do they stand much chance of acquiring the support they need in the current economy. Partnership programs (sometimes called alliances or collaboratives) make it easier for talented and highly motivated people outside the formal school system to join with teachers and school administrators to make a difference.

However, there are also some serious dilemmas to be addressed and challenges to be overcome if these novel and ubiquitous grassroots initiatives are to fulfill their promise. One of them is to figure out methods of promoting and strengthening the local partnerships at a time when certain national trends directed toward the improvement of education loom as potential obstacles.

Generally speaking, the policy climate is favorable for ventures that link different types of institutions, particularly private and public. Paradoxically, however, the elevation of certain priorities for education can pose a predicament for partnerships. The reason is that many of today's education-reform efforts are national in scope and intent. They aim, usually with powerful political backing, to articulate nationwide purpose and resolve. And they aim to modify education practices, everywhere. To what goals should Americans aspire in their educational system? If we don't know where we're headed, the argument goes, we'll never get there. But such pressures may also have the unintended consequence of blunting bottom-up initiatives—and the alliances are quintessentially bottom-up enterprises.

The extraordinary momentum toward development of national standards, for example, is a central feature of the 1990s reform scene. Never has the country seen so concerted an effort in education. The White House and many of the state governors are directly involved. The model usually proffered is the work of the National Council of Teachers of Mathematics in outlining standards for that subject that are intended to guide curriculum development and teacher education. Efforts now are under way to articulate similar standards in science and other school subjects, using the work in mathematics as inspiration and guide.

Close on the heels of the move toward national standards is the possibility, already in the discussion stages, of national examinations. Many states already have instituted tests more aggressively than they had in the past. They use them for judgments about schools, and sometimes as a basis for decisions about funding. Now the impetus for uniform testing has moved to the national level. (So far, on the part of government officials at least, only voluntary national exams are envisioned; but many observers consider it unlikely that school districts will choose not to participate if such examinations are instituted.)

National examinations and standards may indeed give schools worthwhile aims to shape their aspirations and effective methods of gauging progress and assuring accountability. Their use may also engender significant support in the community and prove to be a force for improvement. But, considered in the context of partnership programs, these national efforts can pose problems.

Typically, the line between standards and standardization is blurred. Forceful state-level attempts to establish testing programs that have real consequences in the lives of children (like minimum competency examinations) have not always encouraged variation and local independence, at least up to now. Quite the contrary. Teachers usually teach for the tests, and the tests are designed for everyone. They are not tailored to local circumstances nor easily modified for local needs.

The essence of a successful alliance is that it is fine-tuned to take advantage of unanticipated opportunity and eager, voluntary talent that is close at hand. They must remain flexible to be effective. The slow but obvious deterioration of aquatic life in a community pond brings the school biology teachers and students in contact with scientists at a nearby laboratory in the university. They work hard to understand the chemistry of the increasing pollution and how it might be remedied. Students learn that it is not an easy task to revive the pond because the pollution seems attributable to the use of certain chemicals on nearby farms. Economic considerations are, therefore, powerful. The students are absorbed in the task because the problem is one of intense, public interest; its resolution would have palpable impact; and powerful forces are at working trying to affect the outcome.

In one place, it's a polluted pond. Elsewhere, it's a focus on fire-retardant materials because that's the business of the nearby factory or the research focus of a certain professor. Such highly particularized educational activities do not always comport easily with the drive toward standards and cross-state and cross-district comparability; it's difficult to energize people with aspirations and programs they do not have a major role in generating and that are not attractive to proximate needs and strengths.

Thus, the process of creating and sustaining a local alliance is neither straightforward nor easy. Each alliance, and especially a good one, is exquisitely site-specific and adaptable. Its success depends unambiguously on particular people and opportunities: the interest of a corporation's chief executive officer, the commitment of a school principal, the initiative of a particular teacher, the dedication of a professor, the vision of a museum's director, or the influence of a university dean or president. Usually several such factors are in evidence, and more.

All those involved in a particular partnership know who makes it work. However, an outside observer trying to understand (and perhaps emulate) such a program usually sees the organizational form of the enterprise and the accomplishments—easily missing the more subtle roles and styles of the prime movers. For this reason, grassroots efforts like the alliances are extraordinarily difficult to factor into broad strategies for educational reform. It seems much easier to hammer out standards and develop tests.

This policy dilemma of reconciling local energies with national vision may be surmountable, but it will take hard work and unusual sensitivities in groups and among people that do not always or naturally work together: teachers and politicians, private industry and public agencies, public schools and universities. Yet, unless the alliances are linked *both* to whatever national consensus emerges about education and to local priorities, they are unlikely to thrive.

In addition to policy complexities, which operate mostly in the background as viewed from a single school district or geographic region, alliances face difficult hurdles much closer to home. Partnerships are fragile. Hopes are high when people start to cooperate, but often the expectations are unrealistic, leading to disappointment and even antagonism. A particular company or university, for example, may have decided to increase dramatically its involvement in the improvement of mathematics education in the surrounding school district. Test scores are low, and those who speak for the firm or university want both to enhance the quality of the community to attract the professionals it needs and also to improve the skills of its entry-level employees or students. Mathematicians are encouraged to work with teachers and are sometimes released from other duties for the purpose. Students visit the industrial labs. Equipment is given to the schools. Sometimes there is considerable fanfare when the partnership is launched.

Two years later, however, scores on math tests may not have improved. Problems in the schools seem no less serious. Without knowledge of the difficulties and complexities of educational change, such disappointment can be, and has been, devastating to a local alliance. Sometimes, in the backlash, there has been less support for the schools than existed before the alliance was established.

For partnership programs to grow and thrive, it is necessary to take a hard look at what they can and cannot do. If those involved in such activities do not become realistic about their potential and knowledgeable about how they work, the resulting setbacks will diminish the chances for positive impact that these novel and energetic programs can have. Those interested in educational improvement indeed do well to go beyond the handshakes and examine critically what has been done and the challenges yet to be met, both at site level and in the policy realm.

Introduction

Frank Young

Assumptions underlying American education are being challenged in response to the demands of global economic pressures and technological evolution. Growing awareness of declining U.S. competitiveness, and of the key role played by the schools in preparing young people for work in an environment that depends increasingly on the ability of employees at all levels to carry out more complex tasks with less supervision, has caused a reexamination of national educational standards.

The relatively poor performance of even the best U.S. students on tests given to peers in several other countries suggests that American schools must change to enable *all students* to achieve higher levels of academic performance, whether they intend to go to college or directly into the workplace. Failure to close this achievement gap, many fear, will cause a progressive decline in the quality of life for each succeeding generation of Americans.

The educational picture in California reflects in bold relief that of the nation as a whole. Despite improvements resulting from the school reform legislation adopted in 1983, the high drop-out and low college participation rates of students from groups comprising an ever greater share of the state's population continue to be a major concern. This tragic loss of human resources must cease if the state if to maintain its economic vitality and social stability. More students from groups underrepresented in higher education—i.e., African-Americans, Latinos, Native Americans, recent immigrants from Southeast Asia, low-income and rural families, and the disabled—must complete high school adequately prepared to continue their studies at institutions of higher education and to assume full participation in California society.

The obstacles to enabling all students to meet the world-class standards sought by government and the private sector are daunting. Changes in American society and culture, and in America's relationship to other nations, are causing greater numbers of students to depend more heavily on the effectiveness of the schools to prepare them to succeed in an increasingly complex world. While the expectations of schools are growing, the fiscal resources available to the schools to meet them are dwindling.

One major barrier to raising the level of achievement of all students has little to do with money. It is the belief—held by many students and parents and, sadly, by some educators—that success in learning depends solely on ability and not on hard work, appropriate curriculum, and effective teaching. This is particularly true with regard to learning mathematics and science.

By working together with schools, persons from higher education and business can help discredit the (exculpatory) myth that achievement is rigidly determined by nature. They can draw upon information and role models to demonstrate what people with all ability levels and from all backgrounds have been able to achieve through effort and education. They can convey with credibility the message that: high levels of literacy and numeracy skills contribute significantly to prospects for success in college and in almost any kind of employment; these skills can be learned by students of average ability; failure to learn them will seriously compromise their ability to find a job with potential for personal growth and substantial income.

Another reason many students do not put in the effort needed to achieve high standards is the perception that school has little to do with life. To motivate young people who lack the community support and family background statistically associated with academic success, the links between school, college and work must be made real. The knowledge and skills that schools ask them to learn must be tangibly connected to something vital beyond the classroom. This is a demand schools are generally not able or funded to do by themselves.

Local businesses and postsecondary institutions can help meet this critical need. Partnerships with schools provide a vehicle for relating schoolwork to "real-world" expectations, and for introducing students to the environment where people can use the outcomes of their education. The impact of such experiences on students can be profound. At the same time, business and higher education can help influence positively the preparation of their own future employees and students.

Belief in the ability to achieve high standards and adequate, systematic effort to attain them are most likely to result in higher academic achievement if instruction is student-centered and the curricula are designed to support specific learning outcomes, connect learning to applications, and articulate carefully with feeder schools and the colleges which most graduates attend. Collaboration with higher education and business can contribute powerfully to both of these goals.

Among the most urgent challenges facing American education in this decade are the tasks of: identifying the mathematical and scientific knowledge of greatest worth for all students; determining the sequence in which it shall be taught; developing instructional strategies and materials that make it accessible to all students, and enabling teachers to use these tools effectively. Meeting these challenges will require the coordinated efforts and resources of educational institutions, parents, communities, business, and government. To this end, schools in California and across the nation are entering into collaborative arrangements with colleges, businesses and/or government agencies.

Since 1984, the California Academic Partnership Program (CAPP) has been contributing to this effort. CAPP was established in the California School Reform Act of 1983 to facilitate and encourage collaboration between secondary and postsecondary institutions. CAPP partnerships enable faculty, counselors and administrators from middle and high schools to work jointly with their college and university counterparts to make college preparatory curricula more effective for more students. The goal of the program is to increase the number of students who enter and succeed in college. For reasons noted above, special emphasis is accorded to students from groups historically underrepresented in higher education.

CAPP supports the establishment of academic partnerships between secondary schools and community colleges, public or private baccalaureate degree-granting institutions, and business enterprises aimed at: (a) transforming the relationships between educational institutions in ways that directly benefit students; (b) improving curriculum in subject areas required for admission to college; (c) strengthening teachers' capacities to enable all students to learn this curriculum; (d) enhancing the ability of students to benefit from these changes; and (e) bettering postsecondary and business partners' understanding of these students' unique needs.

Beyond the Handshakes grew out of an effort to coordinate CAPP's focus on curriculum development with the professional development goals of the Dwight D. Eisenhower Mathematics and Science Education State Grant Program administered by the California Postsecondary Education Commission. A second purpose in seeking the Eisenhower funds was to find out whether the collaborative model developed in CAPP partnerships could significantly enhance the effectiveness of professional development programs.

Over a fifteen-month period in 1990-91, five CAPP partnerships that had successfully completed three-year curriculum development projects were invited to provide professional development opportunities for teachers of mathematics and science. Consistent with the mission of the California Academic Partnership Program, the CAPP–Eisenhower projects targeted particular teachers in schools serving students from groups underrepresented in postsecondary institutions.

In addition to the school-based professional development activities, the project incorporated the following three components, all of which were carried out with the assistance of the University of California, Santa Cruz and the Far West Laboratory for Educational Research and Development.

> **Conference on Academic Partnerships.** Participants in this conference included leaders of CAPP projects and statewide and national programs that advance the professional development of teachers of science and mathematics. The conference examined academic partnerships from several perspectives, generated ideas for the model partnership projects, and guided the project's action research component.
>
> **Action Research on Academic Partnerships.** Each of the five participating CAPP partnerships designed and conducted its own activities. The Far West Laboratory monitored the projects' progress and analyzed their impacts and outcomes in terms of the central question: *What are the characteristics of effective academic partnerships for the professional development of teachers of secondary science and mathematics?*
>
> **Publication on Academic Partnerships.** This book, *Beyond the Handshakes,* the project's final product, provides practical information for prospective academic partners. It includes highlights of the project's conference, selected papers from the rapidly expanding literature of the field, and case studies of the project's model partnerships. The preface provides additional information on the book's purpose and contents.

CAPP has learned much about partnerships from the CAPP–Eisenhower project. We are pleased to share these lessons with the readers of this book. Much remains to be learned, however. We need to build on each new experience and develop new models. We encourage educational leaders throughout California and the nation to respond to the continuing needs of precollege education by assessing the past and prospective achievements of academic partnerships, sharing their own visions and insights, and supporting the development of new, effective partnerships.

Preface

Thomas Karwin

This project has provided an opportunity to examine university–school programs through reading, attending conferences, discussing the issues with colleagues, and reflecting on what we've learned from experience. That rather exploratory process shaped the content of this book in ways that were neither predicted nor predictable.

In the fall of 1990, as we were convening the *Beyond the Handshakes* Conference, the American Association for Higher Education announced that the theme of its 1991 National Conference on Higher Education would be *Difficult Dialogues: Achieving the Promise in Diversity.* The phrase, "difficult dialogues," was suggested by Beverly Guy-Sheftal[1]. According to the AAHE's conference announcement, this phrase signals the need for educators to address the growing diversity of American society through dialogues that are "difficult because basic issues are being reexamined and because deeply (and often unconsciously) held beliefs are at stake."

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[1] Albert, L. (1990). Difficult dialogues. *AAHE Bulletin*, 43 (1).

The *Beyond the Handshakes* project also addressed the challenges of an increasingly diverse student population and the "difficult dialogues" that are needed to strengthen academic partnerships for the professional development of precollege teachers of science and mathematics. Through this focus, this project targeted the disciplines in which Hispanic, Black, and Native American students are underrepresented in postsecondary institutions: mathematics, science, and engineering.

In this work, we strived to look beyond the shared goals and cordial relationships that have characterized relationships between universities and schools, examine the cutting edge of these relationships, and identify the issues that remain to be addressed and resolved. Patricia Clark contributed the title, *Beyond the Handshakes*, that has guided this process.

What's in a Name?

We confess a mild unease with the popular use of the term "partnership" to characterize university–school programs. This term suggests to us a relationship in which the participants formally share responsibility and authority for some activity. In an academic partnership, this responsibility and authority presumably would extend over an aspect of a precollege educational program, e.g., the professional development of teachers, curriculum development, or even instruction. This relationship might be the ultimate goal of some university–school programs, but, today, it is uncommon at best. With rare exceptions, schools remain responsible for all aspects of their activities, and retain authority over their resources. University participants in programs to strengthen precollege programs typically draw upon their own institutional resources (including grants and other extramural funds), and hold ultimate responsibility only for their own actions.

Our search for a more satisfying term revealed a long list of terms with closely related meanings. "Cooperation," "association," "teamwork," "affiliation," and the ever-popular "alliance" connote little more than a working relationship between individuals. The fine shadings of meaning among these and several other, similar terms suggest the rich diversity of human relationships.

Two terms that convey meanings that seem more appropriate to the present task: "synergism" (the interaction of discrete agencies [as industrial firms] or agents [as drugs!] such that the total effect is greater than the sum of the individual effects) and "collaboration" ("work conducted jointly with others, especially in an intellectual endeavor").

In the present context, these terms are not entirely without shortcomings: "synergism" often suggests a chemical interaction, rather than a human or institutional interaction, and "collaboration" is burdened by its military meaning: assisting an enemy!

Disregarding these connotations, we might characterize university–school programs most precisely as "synergistic collaborations," meaning "intellectual work conducted jointly by two or more discrete agencies, such that the total effect is greater than the sum of the individual effects." Although "synergistic collaborations" admittedly is a mouthful, identifying university–school programs—and university–school–business programs—in this way would convey several of the more important dimensions of such programs.

This book's several contributors use various terms to mean "university–school programs." We will use "collaboration" as a shortened version of "synergistic collaboration."

We dwell on this terminology for a reason. A wide range of university–conducted, school-oriented programs are being called "academic partnerships," but many fail to satisfy even a minimal definition of the historically significant, emerging relationship between universities and schools. For example, universities have for many years prepared teachers and offered continuing education opportunities for inservice teachers. Should we now call these activities "partnerships" or "collaborations" because those terms have become fashionable, or because the university seeks the guidance of teachers or school administrators in determining the content of such activities? Similarly, some universities place their students in precollege classrooms as interns or tutors, or employ teachers temporarily as instructors of university students of education. Are these activities "partnerships" or "collaborations"?

What of other long-standing practices of universities, e.g., conducting theoretical research in schools, developing curricular materials, donating surplus laboratory equipment to schools, hosting academic competitions among precollege students, and providing academic counseling to college-bound students?

These activities surely are the raw material of synergistic collaborations, but, in their traditional form, do not qualify as such. Educators at all levels might well build truly collaborative programs on the foundations provided by these traditional activities of universities. To succeed in such endeavors, they must recognize collaboration's three essential components: intellectual content, joint conduct, and synergistic outcomes.

Educators should acknowledge and advance the new relationship between universities and schools, and not simply "put old wine in new bottles."

Overview

This book begins with a foreword by J. Myron Atkin, who describes the "novel and ubiquitous grassroots initiatives" of academic partnerships in the context of national policy trends for the improvement of precollege education. He urges educators interested in partnerships to "take a hard look at what they can and cannot do" and to examine the "challenges yet to be met, both at the site level and in the policy realm."

Frank Young's introduction provides an overview of the challenges that educators face in California and other states, and describes the work of the California Academic Partnership Program in responding to those challenges. He then summarizes the background and components of the *Beyond the Handshakes* project, and relates it to the goals of the California Academic Partnership Program and the Dwight D. Eisenhower Mathematics and Science Education Act, which funded this project.

The book's first major section is the report of this project's "kick-off" conference, also titled *Beyond the Handshakes*, in September of 1990.

Rather than presenting detailed proceedings, this section summarizes the conference's purpose and activities, and includes three of the conference's most interesting, thought-provoking, and useful presentations, which were by Eugene Garcia, Joseph Oakey, and Mark Edelstein.

The second major section presents several thoughtful papers on academic collaborations. Ideally, as an outcome of this project, we could offer a short list of basic principles for implementing such programs and maximizing their success. In fact, several knowledgeable and experienced academic collaborators have already proposed such principles, and provided unique perspectives and valuable ideas. Accordingly, instead of contributing yet another list of key ideas, we selected noteworthy papers for inclusion in this volume. The result is a wealth of readings that we recommend enthusiastically to the reader.

The section begins with Louis Albert's insightful overview of academic collaborations and continues with papers on each of several dimensions of this subject. Each of these papers is preceded by a concise summary of its main points; most also are followed by comments and reflections on their content.

Susan Brookhart and William Loadman address the "culture gap" between universities and schools. The National Academy of Education reports on educational research priorities. Frank Newman and Diane Rigden provide valuable advice on business–school partnerships. The next group of papers offer thoughts on teacher education by contributors Phyllis Edmundson, Diane Rigden, Mary Montgomery Lindquist, John Harvey, and Christian Hirsch. Then, we have insights on the professional development of teachers in a paper by Jane Stallings and Theodore Kowalski, and a second paper by Nancy Adelman. Milbrey McLaughlin then revisits Rand's "Change Agent Study" of 1973–1978, refining the conclusions of that landmark study in the light of subsequent research. Finally, John Goodlad and Ken Sirotnik contribute their forward-looking paper on the future of academic partnerships. This section concludes with a collection of selected readings about academic collaborations.

The book's third section presents Carolyn Cates' action research component of this year-long project. The purpose of this component (stated most briefly) was "to examine the processes impacts and outcomes within and across the model partnerships" included in the CAPP–Eisenhower project. This section also includes case studies and contact persons from each of the five model partnerships.

Deborah Hancock's "Afterword" provides the capstone for this publication. In her discussion of the book's contents, Dr. Hancock also summarizes her experiences as the statewide director of the CAPP-Eisenhower Project.

The contributors to this project and this book have enriched the emerging definition of synergistic collaborations between schools and universities, and helped to advance such collaborations "beyond the handshakes." We invite the reader's attention to their ideas, and urge all educators to pursue collaborations of their own design, and to share their experiences, insights and guidance with prospective collaborators. By collaborating, universities and schools can respond most effectively to the educational needs of our increasingly diverse students, so that they may enjoy the benefits of education and become full participants in society.

Beyond the Handshakes

I

The *Beyond the Handshakes* Conference

Overview

The *Beyond the Handshakes* conference convened September 20-22, 1990, at the Granlibakken Conference Center (Lake Tahoe, California). The eighty-eight participants included an extraordinary mix of school and university teachers, school administrators, business leaders with extensive experience in academic collaboration, representatives of statewide public and private agencies, and prospective academic collaborators.

The purposes of the conference were to (a) guide the implementation of a progam of action research on university–school collaborations for professional development in science and mathematics; (b) examine the implications of such professional development activities for the education of preservice teachers; and (c) initiate the preparation of the present book.

The participants examined university–school collaboration from several perspectives: benefits; problems; characteristics, elements and models of effective collaborations; strategies for developing such collaborations; and needs for additional information. Specific topics included "issues and opportunities" for collaborative projects in the following areas: evaluation, professional development of science and mathematics teachers, instructional technology, university–school–business collaboration, and student diversity.

Conference Steering Committee

- Sally Casanova, Dean, Academic Affairs, Office of the Chancellor, The California State University
- Carolyn Cates, Program Director, Far West Laboratory for Educational Research and Development
- Patricia Clark, Director, The Oakland Health Academy
- Dolores A. Escobar, Dean, School of Education, San Jose State University
- Eugene Garcia, Professor of Education and Psychology, University of California, Santa Cruz
- Deborah O. Hancock, Director, California Academic Partnership Program, The California State University
- Edward Landesman, Professor of Mathematics and Director, Monterey Bay Area Mathematics Project, University of California, Santa Cruz
- Alfred Manaster, Professor of Mathematics and Director, Mathematics Diagnostic Testing Project, University of California, San Diego
- Elizabeth Stage, Director, California Science Project, Office of the Senior Vice President—Academic Affairs, University of California
- Dolores Terrell, Mathematics, Engineering and Science Achievement (MESA)

Principal Speakers

- Mark Edelstein, Director, Intersegmental Coordinating Council
- Eugene Garcia, Professor of Education and Psychology, University of California, Santa Cruz

- Deborah O. Hancock, Director, California Academic Partnership Program, The California State University
- Edward Landesman, Professor of Mathematics, University of California, Santa Cruz
- Charles Ratliff, California Postsecondary Education Commission

Panelists

- Craig Blurton, California Technology Project
- Carolyn Cates, Far West Laboratory for Educational Research and Development
- Patricia Clark, Oakland Health Academy
- Janis Cox, Achievement Council
- Lorraine Dageforde, California Educational Partnership Consortium
- Phil Daro, California Mathematics Project
- Rosa DeAnda, California Community Colleges
- Sharon Diaz, Samuel Merritt College; Association of Independent California Colleges and Universities
- Faye Johnson, Dos Palos Joint Union High School District
- Edward Landesman, University of California, Santa Cruz
- Alfred Manaster, Mathematics Diagnostic Testing Project
- Chogollah Maroufi, The California State University, Los Angeles
- Lily Mow, Samuel Merritt College
- Nancy Negri, Oroville High School
- Joseph Oakey, Autodesk Foundation
- Michael Rubin, Evaluation and Training Institute
- Helen Roberts, Office of the Chancellor, The California State University
- Sharon Ross, The California State University, Chico
- Kitty Salinas, Regional Educational Television Advisory Council

- Steve Schneider, Woodside Research Consortium
- Elizabeth Stage, California Science Project

Focus Group Leaders

- Carolyn Cates, Far West Laboratory for Education Research & Development
- Donald Fairbairn, The California State University, Bakersfield
- Carol Fields, Lawrence Hall of Science; Mathematics, Engineering, Science Achievement
- Shelby Givens, Pacific Gas & Electric Co.; Mathematics, Engineering, Science Achievement
- Deborah Hancock, California Academic Partnership Program
- Patricia Keig, The California State University, Fullerton
- Robert Redd, Pacific Bell
- Dani Taylor, Samuel Merritt College
- Dolores Terrell, Mathematics, Engineering, Science Achievement
- Elnora Woods, California State Department of Education

Conference Staff

- Thomas Karwin, Coordinator, University–School Programs, University of California, Santa Cruz
- Susan Kelly, Graphic Recorder
- Melissa McClaren-Lighty, Program Assistant, University–School Programs, University of California, Santa Cruz

The *Beyond the Handshakes* conference fostered constructive dialogues among individuals with a wide range of perspectives about, and experiences with, collaborative activities and provided practical insights to the leaders of the five CAPP–Eisenhower Model Partnership Projects. The participants' responses to an evaluation questionnaire indicated that the conference accomplished these objectives. The conference was not intended to yield such "products" as a consensus on aspects of university–school collaboration or plan of action to advance such collaborations, or revised directions for the model projects, and, indeed, did not do so. Rather, it provided an unusually rich experience for its participants and—for at least some—inspired new optimism and enthusiasm for collaborative activities.

While all of the presentations were well-received, a postconference evaluation showed that the participants were particularly appreciative of the presentations by the following speakers: Eugene Garcia, professor of education and psychology, University of California, Santa Cruz; Mark Edelstein, executive director of the Intersegmental Coordinating Council, and Joseph Oakey, manager of the education department of Autodesk, Inc. In the interest of sharing some highlights of this unique conference, we offer the informal presentations of these three educators in the following pages.

NOTE: Positions of individuals reflect their status as of the conference date, September 1990.

Underrepresented Students: Our Diverse Population

Eugene Garcia

It is a great pleasure to be here. As you see, not everyone from Santa Cruz wears Birkenstocks, at least not today. Not today. I don't want to break the myth of Santa Cruz. As I said, it's a pleasure to be here and share some of my thoughts with you regarding this important conference topic. Clearly, Tom and I and a number of faculty at Santa Cruz, in conjunction with school people in Pajaro Valley School District in Santa Cruz County, have been very interested in the issues of partnership and, essentially, how we're all in this together.

I don't have in my bag of words or tricks anything that's going to solve the many challenges before us in California, so anything I say, don't hold against me. They are some thoughts I have, some experiences that I've had, and I want you to understand that. Together only we can face this challenge and there's no expert that's going to tell us how to do it.

Someone much wiser than I said a text without a context is a pretext. So, to some extent, I've got to lay a context for you. First of all, let me lay the context of education *per se* in this country. As you know, there are now over seventy-five national studies telling us the dire straits, the crisis, that we are in in education, not only in this country but across the world. As I visited China three years ago, and the Soviet Union about two years ago, I was not surprised to learn that they are also in a crisis educationally. And they're trying to do something about it.

Most recently, I was surprised to hear from the former secretary of education in Japan that Japan is in an educational crisis and some of the Japanese scholars are coming to the United States to learn from us about how to deal with crisis. Kind of funny. In any case, it's clear that many of us think and understand that we are in an educational crisis, that it is part of the context that we live in today, and that we have to deal with it with regard to partnerships. It's also clear this crisis makes it known quite straightforwardly that the future of our societies, of our society of the United States, is dependent upon our youth. And we have to be concerned about that. At the bottom of all this concern is essentially our own concern: If we don't do right by our youth, then we're doing ourselves wrong. And certainly that's what I would call our best self-interest We're not doing anyone a favor when we do these things. We're doing ourselves all a service, we're meeting a responsibility that is really all of ours, not a favor to our youth, to our young people.

One other context of education that I only recently began to understand is that how much education goes on outside those institutions we call educational institutions. You're here today learning, coming to a conference to learn about something, to come together, to educate each other about things that are important. Now here's a person standing before you who went through about as many formal years of education as possible—I can't count. I did two post-docs after I finished my doctorate. I mean I just kept going, but even so, that only accounts for probably one-third of the learning that I've been exposed to. There are corporations that are spending more educating their employees than the University of California is spending educating the students who attend in their halls. So education is not something that has somehow been given to educators as we formally understand it. It's something that, as society has understood and now the corporate, private sector understands, is everybody's business. It's not just those of us who are trained teachers; we're at the universities or in the schools. This statistic is quite alarming for most of the students that you and I know in our junior highs and high schools. They will probably receive two-thirds more of their educations outside of the schools, kindergarten through postgraduate level, than they receive in that education system. We have to understand that.

Lastly, in the general context of education, there is an issue of what kind of a future education has to deal with for our youth. My two daughters who are fifteen and seventeen are likely going to switch jobs in the neighborhood of eight to ten times before they're through their lifetime of employment. In addition, it's very likely that my seventeen and fifteen-year old daughters will at least change careers, professions, three times. This compares to the individuals whose fathers worked typically one place—farming—all of his life. That's amazing, given those of us in this room are likely stuck in the one profession. I say that in the most positive of terms, but we're not likely to go out tomorrow and be engineers. It's very likely for the children of the future to shift their professions, their careers.

That's a context that we have to prepare many of our youth for. In general then, if the school's job is not to deal with very specific professional development, professional learning and teaching, then schools must serve their students well with regard to those things they will need in many professions, in many careers, and in many tasks that they have to deal with. Certainly that gets back to basic skills. No one here, I think, would argue that we do not need people who can communicate, who can in fact do computations, understand computational matters, etc. The basic skills are important. I'm not suggesting otherwise at all. But I think those of us involved in partnerships and in schools need to understand that we must begin to deal with the issue of developing living processes for our children, for our students. They must be able to adapt to new challenges, challenges we can't even imagine presently. That's what we must prepare the present crop of students for.

Now, these two challenges at some point seem disparate. We need to have them read and write, do mathematics and so forth. At the same time we must have them be able to think, to be good citizens and to be good problem solvers, basically, to take on the challenges they need to take on. Unfortunately, what's ahead of us in this general context, is the need to blend those two things together, those understandings of the basic skills and these new understandings of what kids must deal with in the challenges they must face.

In essence, I would argue that students must be able to react to changing situations reasonably, with reflection and analysis, no matter what the specific employment, civic or cultural context they're in. That's a different challenge from what schools had two, three decades ago, or even most recently.

Let me turn to the people we're most concerned with and that I promised to talk a little about tonight: our diverse populations, particularly in California. This is particularly true for the diverse populations which our schools are serving and which we can only do together in a partnership manner. It is these students, unfortunately, who have essentially been exposed to a very repetitive, low-level processing "don't think curriculum," highly tracked. I don't need to tell you about the burden that is primarily on them to move beyond those various simplistic challenges. Our future cannot afford to continue to treat these students in that manner. Let's look at that future for these students. We can do that very clearly by looking at the present. If you don't mind, let me share with you some recent data with regard to some of these students. First let's understand that, according to Department of Labor's statistics, by the year 2000, seventy-five percent of the jobs we will have in our labor market in the United States will require some college education. Seventy-five percent. The present-day employment data suggest that only about forty percent of all jobs require substantive college preparation. In 1987, unfortunately, twenty-three million American adults were estimated to be illiterate. Thirteen percent of the nation's teenagers join this group every year. Thirteen percent of the students who are moving through our system joined that twenty-three million. We're not decreasing illiteracy; we're increasing drastically every year. In 1988 between 750,000 and 950,000 U.S. public high school students left public schools without graduating. Unfortunately, during the 1980s school dropout has not decreased. It has remained roughly at thirty percent for all students. For Black, Hispanic and rural youth a lag in educational achievement continues to be a primary attribute educationally. Eighty-five percent of Native American youth, fifty percent of Spanish youth, and forty-four percent of African-American youth do not complete high school today. Keep in mind, these are the students who you and I will need to be productive if we're going to draw our pensions in the next twenty to thirty years.

To give you the most recent data, in 1990, approximately forty-nine percent of California's K through 12 population is white Anglo-Saxon, thirty percent is Hispanic, ten percent is Black and nine percent is Asian. In essence we have the merged minority becoming the merged majority. We knew once the term minority. Now we must use the term merged majority for these students in our schools. In the year 2000, forty-four percent of the student body will be White, thirty-five percent Hispanic, eleven percent Asian and eight percent African-American. In other terms, forty-four percent of the population will be what was fifty-six percent of the merged majority. In the year 2030, only forty years away (if we can remember forty years, we can look forward forty years), thirty-three percent of the population will be White, and sixty-six to seventy percent will be the merged majority. Things will change.

In a recent study, we visited a school in Anaheim, California. We were there because we were interested in the kind of program that was being implemented for a very diverse population linguistically and culturally. We visited with a fifth grade teacher. She'd been teaching in this school for sixteen years. She hadn't moved classrooms; she hadn't left the district; she'd been there. She remembers when almost all the kids in her classroom spoke only English and came from middle-class white homes. She remembers the time about seven or eight years ago when the majority of kids in that school spoke Spanish, very few coming from white middle-class homes. Today she has seven languages in her classroom. She has Hmong, Vietnamese, Chinese, Spanish, English, Korean, and Tagalog speakers, and recently Russian. Now this teacher didn't move at all; she didn't go anywhere; she didn't pack her bags; she didn't migrate; she wasn't mobile. She came from the same school and the same classroom. In sixteen years she has seen the nature of that population change dramatically. It's a microcosm, of course, of what's happening in California and the challenge before us.

There's a story of this young man who moved to Watsonville. I have some Watsonville colleagues here, so I have to tell this Watsonville story. Johnny came from Connecticut to Watsonville, and went to a little rural school there. His mother and father moved there and Johnny went to school there. Johnny didn't have any problem in school. He's in third grade. He looked around, saw Mrs. Martinez was the teacher and there was Juan and Maria and all these other people in the classroom. It didn't bother him at all; he's a very progressive kid. The lessons began and Mrs. Martinez said, "Okay, we're going to have a history lesson now, children." He noticed that she was moving back and forth in Spanish and English but that didn't bother him. He understood. She said "Okay, we're going to have a history lesson and I'm going to say some famous quotations, and you're going to tell me who said them. This is going to be focused on the Revolution." Well he's from Connecticut, from New England; he knew this stuff. All right. This was what Johnny was waiting for. So Ms. Martinez gave some quotations that you and I have all heard: "Give me liberty or give me death." Johnny raises his hand, he knows that one. Teacher calls on Maria. "We have just begun to fight." Johnny knows that one. Come on, he's from New England. Mrs. Martinez calls on Gilberto. Well, this went on for about twenty minutes. Johnny's getting frustrated, not getting called on. Mrs. Martinez turns around and writes something on the board, and she hears from somewhere in the room, "these damn Mexicans." And she turns around and says, "All right now, who said that?" Johnny stands up and answers, "Davy Crockett, at the Alamo."

My point is, I think many of us in the profession sort of feel like Davy Crockett at the Alamo: "Where did all these people come from?" Now that's one thing, and of course the politics of all these people coming is one thing, but the educational challenge that's facing you is quite different. They're there, they're not going away. They're coming, in wave after wave, and everything I've talked about already indicates that they're not going to stop coming. Now we can either throw out the defenses and, like Davy Crockett, begin to fight those intruders. On the other hand, we can open the doors and we can begin to dialogue and begin to try to understand the phenomenon and understand how we might meet the challenge together.

Our future essentially lies in what you have already understood, handshakes, but, again, the conference is *Beyond the Handshakes.* I can't help but smile because when I was in college and began to call myself a Chicano we had a handshake, you know. This is an identity. We have to have a handshake. But you all know, those of you who come from minority groups, you've got to get beyond the handshake. That's one thing that identifies yourself to be like someone else, have similar values, but you've got to get beyond that. You've got to get to the substance. In essence, what lies as the challenge for a diverse population is these contexts that are placing them in highly vulnerable situations, is allowing them to achieve in social, educational, and employment standpoints.

Our vulnerable populations must succeed educationally if we are to succeed as a society, no doubt about it. Now in recognizing this situation, in understanding that you and I are here because we have that value, we've had the handshake. How do we go beyond it? Well you're here today to pick up some of those steps, some of the techniques, and that's fine, technique is fine. We need to understand how we can do things better, instructionally, how we can organize, reform, all those fine words, restructure. We need to do that. My message to you is that we're really going to deal with the challenge of diversity in this state and in this country. We need more than to understand the specific techniques of doing it. In essence we need to have the heart, the caring. We need to want to do it. I can give you all the best strategies to solve a problem, but unless you—we as a community—decide that that's something that we must do and want to do, forget it. You know that and I know that.

So the challenge in dealing with a diverse population is not coming up with a new curriculum. It isn't coming up with a new software package. It isn't getting Apple to put computers throughout your school. It isn't cooperative learning. Okay. Those things might help. It isn't even thematic instruction. Those things might help. It isn't even getting rid of tracking, although that might help. The key is wanting to do this. As I go out and visit schools that are successful with very diverse populations, what seems to come to me is that where teachers and communities and parents have made this happen successfully is where there is heart and where there is caring for students, when there are professionals, whether they be teachers or principals, who care for kids. And who care for kids who might not be like their kids. Now that is the heart of what's going to solve our meeting the challenge for diverse populations.

Let me say that what I see lacking in places that have failed is this kind of intensity, this kind of caring, this kind of heart. I see people looking for the new trick, the new little answer. "Dr. Garcia, how do we do this?" "Dr. Garcia, if we could just do that." "What about this?" No problem in asking those questions, but unless the commitment is there, the heart is there and the caring is there, forget it. Now I've seen it in communities in southern California, in northern California, in the central valley. I've seen it happen, but in every case I've not seen one specific strategy that works for everyone. I've not seen one specific new intervention that works for everyone. But what I see in commonality in those places where it works, and what I see in those places that work in my own region in my own area, is where there is caring and heart, there is success. I don't wish to belabor the point that there needs to be new strategies; I've written extensively about that. But without the heart, without the spirit, you can lay all that aside.

I have a story that a colleague of mine in Arizona told me. He was a northern European who worked on an Indian reservation. He was a physician trained in Europe, and was just challenged mystically by what was going on with the Native Americans in the United States, so he decided to come to America and work on the reservation as a physician. As he began working he realized that many of the indigenous population would not come to him. They had their own medicine man. So he decided to learn from the medicine man. And he tells story upon story about his discussions with the medicine man, but one in particular sticks in my mind. The medicine man engaged in this conversation and during that conversation kept asking the doctor if he knew how to dance. And he says, "Well, yeah, I know how to dance." And they went on, "Well, so and so's been coming to you and not coming to me and they're not doing well." "But do you know how to dance?" "Yes, I know how to dance." He says, "No, do you know how to dance?" Finally they got into a substantive conversation about dance and the ritual of dance and the healing process in this indigenous tribe. Now what he understood essentially as he began to think about the dance and learn about it, is that he couldn't understand the steps. What the medicine man continued to say is that "you will never learn how to dance unless you can hear the music." What we engage in most of the time in our dance in partnerships is the steps. What I'm asking you to do is to listen to the music. The music is here, it's in your heart.

Most of you are here because you're committed to youth, to the next generation. Listen to that music. Don't be consumed by taking the steps, because the music will help you understand those steps. In this conference, *Beyond the Handshakes*, essentially it's learning some steps without forgetting the music and the caring and the spirit and the heart that will eventually make a difference for the diverse populations in this state.

Academic and Corporate Partnerships in the 1990s

Mark Edelstein

I'm not sure I have anything to tell you, but I will try to give you an overview and perhaps give you even some "view" as I am giving you that "overview." I'm also compelled to talk a little bit about things that have been on my mind over the last few months, which you may or may not want to hear about, but you're going to anyway.

I've been thinking a lot lately about a cartoon that I saw in the newspaper. It's a cartoon of dinosaurs. It's a dinosaur in a room very much like this, addressing a conference of dinosaurs. The dinosaur is saying, "My friends, the situation looks very bleak. The climate is changing. Mammals are overrunning the planet and we all have a brain the size of a walnut."

That was very disturbing to me because it was so close to what I had been thinking and saying about conditions of education in California over the last month, and as such it precipitated a reevaluation. I had to consider whether the outlook for California that I had been announcing was really as bleak as what I'd been telling people, or whether my perception was simply hopelessly distorted by the fact that I was living in Sacramento. It's a scientific fact—and I'm sure the scientists in the audience will bear me out—that anyone living within a five-mile radius of the capitol encounters a kind of measurable deterioration of rationality over a period of time, though living in proximity to the capitol also creates an unshakable conviction that the sky is falling. But also, when you live in Sacramento, every morning you open the paper and you're confronted with the gloomy and grief-stricken visage of Dan Walters.

Have you ever read Dan Walters? He's a columnist in Sacramento. Besides commenting on the Sacramento scene and California politics, he's written a marvelous book called *The New California*, in which he talks about the demographic changes in California and what those changes imply for the future of California. Walters is like a modern-day Cassandra, somebody who is doomed to see the future clearly and not be believed, or at least not to have people act on that belief. He seems to get more shrill every day as a result of this. Every morning I open the paper and he's saying the same thing. "Wake up, wake up, California! We're in big, big trouble. The environment is deteriorating. The roads are clogged. The infrastructure is crumbling. The social services are grossly inadequate. And the educational system [he says this over and over again] is not getting the kind of support it needs in order to really educate the diverse population of California."

Meanwhile, state government seems absolutely incapable of dealing with these issues or with a dozen other critical issues facing the state, or to create the kinds of structural reform of itself and the state budget essential to turn the situation around. We're being governed, if at all, by initiative and proposition, and the result is an accelerating free-for-all leading to a cataclysmic collapse.

That sort of message first thing every morning tends to depress one's spirits, particularly since Walters is so obviously right. The California Economic Development Corporation, which is not exactly a hotbed of liberalism, has reached the same conclusion—that business as usual in California is going to lead inevitably, and in the not-too-distant future to a declining standard of living, a shrinking middle class, and economic and social divisions of the kind California has never seen before.

We're all aware of the problems facing education. We see them every day. The population is burgeoning. The K-12 population will grow by an estimated 184,000 students every year for the next five years, which means that we're going to be spending $20 billion over the next decade just to maintain the current level of services, and an additional $10 billion to build new schools. With this amount required just to stay even, how are we going to be able to improve the class size or the per pupil expenditure in California? We now spend $3,800 per student in California, compared to $7,100 in New York. As a result we have the largest class sizes in the nation and we rank a dismal forty-second in terms of high school graduation rates.

And the student population is changing. You're all very much aware of the obvious demographic changes in California, but it's not just the ethnicity of the students that's changing. A quarter of our children now live in poverty, which is up fifty percent since 1981. There are 50,000 children living in foster homes, and that figure has doubled since 1980. And the social services available to these children have declined markedly. Less than nine percent of eligible children in California are currently being served by early education programs or by public child care.

PACE, Policy Analysis for California Education group, which is based in Stanford and Berkeley, recently examined the condition of children in California in exhaustive detail in terms of health, welfare, economic status, family life and other aspects. They concluded that California appears to be in a period of retrenchment in its commitment to children. That's a frightening sentence. *In a period of retrenchment in its commitment to children.* I think that statement should create a kind of moral nausea in all of us. How can a state this rich be in a period of retrenchment, whatever that may mean, in terms of its commitment to children? But it clearly is.

So, schools are trying to deal with children who are more and more challenging, and less and less prepared. And there are more and more of those children every day. We're doing this in a society which is not just indifferent, but in many ways antithetical to education, because of its pace, its materialism, its emphasis on immediate gratification, and its absolute saturation by mass media. None of which can stop the society from requiring higher and higher levels of education, not just from some but from all of our students. Well, I could go on like this until you were all hacking away at your wrists with your butter knives. My intent is not simply to depress you, though that's part of my intent.

I'd like to also talk about the future, just so my remarks will have some relationship with the printed description. And as we enter the 90s, I truly believe that there are reasons for hope as well as for despair, particularly in the areas that you're dealing with at this conference.

For one thing, I think that we've learned a great deal in the 1980s about the strategies necessary to meet the educational challenges I've described. Reforms in K-12 education, curriculum changes, the emphasis on meaningful assessment and staff development, may not yet have created the kinds of great improvements in student achievement that we hoped for, but they have accomplished measurable effects and are clearly moving the system in the right direction.

Likewise, the emphasis on cooperation between the educational segments and on partnerships of all kinds, and the experience that we've gained, have created the foundation to build upon in the 1990s. Consider the experience that we've gained in intersegmental staff development activities from the establishment of the Bay Area Writing Project, to the current structure of the subject matter projects created under SB 1882.

And consider the experience that we've gained through the wide range of other intersegmental programs in California. A recent study by the California Postsecondary Education Commission of nine intersegmental outreach and student preparation programs—CAPP, MESA, CAL-SOAP and other programs—shows that although these programs altogether serve less than ten percent of eligible Black, Hispanic, and American Indian students, they have proven effective for the students that they have the resources to serve, and they develop the kind of strategies upon which expanded efforts can be built.

Obviously, this is true of CAPP. You understand the qualities of effective partnerships, commitment from the top, mutual trust and respect among participants, clearly defined common goals and so on. You understand what contributes to the success of partnerships and what the barriers are. You understand what is needed to evaluate those successes. You're meeting here to discuss these things because you are finding your understanding and sharing experience is part of this process. But you are already very sophisticated about academic and business partnerships.

I think one of the most impressive things about CAPP is that it is immensely imaginative about teaching from itself, and learning from itself, in order to expand the impact of all of these partnerships. Over and over again, we see CAPP activities which take the experience of one partnership to share with the others, take the experience of all partnerships to share them with schools in general. I think this is one of the things that has created an impact far beyond what CAPP was funded to accomplish.

Because of CAPP and other partnership projects, we have an extensive base of knowledge. From that base, partnership projects will undoubtedly expand in the 1990s. I think this is going to be the case, whatever happens, in terms of the larger picture of California. If we can develop the political will to really get California moving, then these partnerships are a proven vehicle for improving educational programs. If we can't, if we continue to be told that we have to do more with less, then these partnerships are an effective way to stretch limited resources, to share expertise among educational institutions, and to develop alternative resources through linkages with business. So I think we will continue to see an expansion of partnerships, both among educational institutions and with the business community in the 1990s.

Educational partnerships, I believe, will move in two different directions. Some will be very sharply focused, as school districts, through improved assessment processes, become more sophisticated about identifying specific needs, and, as programs become more sophisticated, about meeting those needs. In terms of staff development the subject matter projects will play a critical role; their expansion is certainly one of the most encouraging developments in California in the last half-dozen years. These projects will make partnership activities for staff development and curriculum improvement much more accessible to a broad range of schools in California. I think that they, as well as the CAPP projects, will move us toward the institutionalization and the normalization of partnership activities so that partnerships will become a part of normal functioning in every school in California. At the same time that we see this increase in sharply focused partnerships, I hope we'll also see an increase in more broadly based partnerships for a limited number of schools, those performing at a level significantly below state averages. The schools that need the most often have the least ability to develop the plans and strategies necessary to meet those needs. Such schools require long-term commitments from other institutions willing to assume a kind of co-responsibility for the success of a school's improvement efforts. This sort of partnership involves sharing of many different kinds, and a sharing of resources over an extended period. Such partnerships might affect a small number of schools, but for those schools it would be critically important.

And then there are partnerships with business. Today, one can loot savings and loan institutions with impunity, but in olden times, as we say, bank robbery was a crime, and one of the most successful of those criminals, a man by the name of Willie Sutton, was once asked why he robbed banks. His response: "Because that's where the money is."

I think we have a tendency to approach business partnerships with the same spirit. That's not unreasonable. Businesses have a lot of money, and they give a lot of money. In a recent survey of Fortune 500 companies, it was found that ninety-eight percent of those companies contribute to education and that three-quarters of those contribute cash. IBM alone, in 1988, contributed $81 million to educational institutions.

California is home to some very big contributors. I've been living in Sacramento long enough to say "cash cows" but in polite society I prefer not to use the term. We'll call them contributors. Chevron gave $1.5 million dollars to Stanford's "accelerated schools" program. Apple, Wells Fargo, Atlantic Richfield, all are major contributors. Pacific Telesis committed $2 million to six California schools for the "Education for the Future" program. In the past, much of this money has gone to higher education, but increasingly I think businesses are looking to the investment of schools as a prudent and necessary way to invest long-term capital. They're looking at these investments in much the same way that they look at traditional research and development expenditures.

More significantly, there is a growing recognition on the part of both schools and educators that money is not the only thing that businesses can contribute. This was an important point on the pictograph that I was looking at earlier, that businesses have much more to contribute to education than simply cash. And, in fact, I think these other things may be the most important things, particularly in the areas of science and mathematics. Businesses can provide expertise, not simply in terms of scientific and technological expertise, but also expertise in management, in organization, and in staff development. Let's face it: Business has been spending hundreds of times what education has been spending in staff development over the last decade and it's quite likely that they've learned something through these expenditures that we could profit from. Businesses can provide equipment, they can provide experiences for students, they can provide jobs, they can provide mentors, they can provide motivation. They can provide the tangible connection to the outside world which is so important for our students and sometimes for ourselves in convincing us that what we're doing in the classroom is relevant to what people insist on calling "the real world."

These contributions are so important, in part because they can be made by businesses or professionals that don't have $81 million to contribute but who do have time and energy and willingness to help schools and students. Think about what's been accomplished through community mentor programs like La Puente is using, or through the black scholars program sponsored by one hundred black men in Los Angeles.

Business is still a largely untapped resource for schools, but I feel confident that partnerships with business will expand because of a growing sophistication on the part of schools, and a growing awareness on the part of business that schools cannot do everything that they are expected to do alone, and that when schools fail, businesses ultimately pay the price.

So, I think there are many reasons for optimism, particularly with regard to the areas that you're focusing on here, staff development and science and mathematics. There is money for staff development, there are effective structures, there is a depth of understanding and expertise, and there is a great potential for the development of additional partnerships; so, if we can keep these staff development efforts focused where they are meant to be, on the end product of student achievement, and if we can keep those damn mammals from overrunning the planet, I think that there's a chance that we might actually make it to the year 2000, in spite of ourselves.

Academic, Business and Corporate Partnerships

Joseph Oakey

Let me comment a little bit on risk. When we talk about risk and possible failure I think probably the education community sees failure as such a terrible disgrace. Maybe it's a disgrace because if some student fails, he's got another half year to make up for that failure. Parallel to that might be called trial and error, but maybe the better term would be approximation and correction. You have a pretty good idea where your goal is and you try to get there, and you don't quite get there and need to make a correction, and hopefully get to where your goal is or whatever your modified goal will be.

I don't think I have to say much about my background. You've all heard me and know that I've been in education and had a great career there, and then went over into the private sector. I think you should also be aware that I'm as comfortable in the corporate sector as I am in the education sector, so I can deal with people there. I sit on a couple of national councils working with the modernization of industry as well as the work force.

If I had to categorize myself, I would personally like to be categorized as a futurist planner—not necessarily a *doer*, a futurist *planner*. Let someone else do all the work. I like to do the planning. For some years, I taught a three-semester graduate course in planning. The first semester we spent just dealing with futurist literature, trying to get people to understand what you deal with when you deal with the future, not necessarily that you can predict what the future is going to be. You can study trends and guess but that isn't any guarantee.

The second semester we spent doing something we called inventing the future; that was knowing pretty much where trends were going to go, inventing what you would like to see the future look like, designing it, writing scenarios. So you could say: "This is the ideal world. It's the kind of world I'd like to see or be in."

The third semester was specific planning, how to get there, with the idea that you have to have several interventions along the way rather than "here's a future, and, bang, we're going to get to it." But for one thing people are not patient enough to work that way through a plan. You have to have little successes along the way in order to buoy you up and keep on going for the final goal.

The other thing that I dealt with is that before you invent the future, you have to understand your past. You've got to study history in order to know where it was you have been and what kind of forces brought you where you are now. What are those forces that brought you there? So, I'm going to just talk about history a little bit, and education. If I bore you, write notes or do something else, but a few of you may be interested.

Horace Mann really is the creator of the educational system that we have today. It was in about the 1840s. If you understand that period, the only method of communication at that time was either verbal or print, and print was very crude. They had not yet developed the linotype machine. That was to come along a little bit later. All type had to be hand set. So, there were very few books, very few newspapers. Printed material was scarce and, of course, there were no telephones, telegraph, you name it. Television, movies, that stuff was to come way in the future. So, there were only two ways of conveying information.

The schools were invented, basically, so that you could put students together in a room and the teacher could convey information to them verbally. It was to give them vicarious experiences about information. Now, the students in those days learned work skills on the job. About eighty percent of the the workforce was agricultural, and most of those were on small farms. If there were industries in those days they were pretty much small industries. They had to be run either by water power or wind power or animal power. So there was very, very little industry and they didn't have the term *engineer* then. They called people who were inventing things and fixing plows, and so forth, "mechanicians."

In that age the school was born. It was born so that you could have about thirty people in the classroom with a teacher. The students needed summers off so they could work on the farms. That was the creation of the institution we call schools.

At the same time, Andrew Carnegie, as you know, was very interested in higher education. He put together a commission because any time a person got together fifteen or twenty boys, they called that a school; rules were not important in higher education in those days. Later they called it a college. Carnegie said, "Let's define what a college really is." The commission said, "Well, if people will study a subject a few minutes a day, or five days a week, or whatever length the school year is (it wasn't exactly 180 days then—it was a little bit shorter because they needed more time on the farms) for four years, and if they come to an institution, we'll call it a college. The intent of the Carnegie unit was not to establish a high school. It was an intent to establish the criterion for identifying the college. However, the high schools said, "Well, if that's what we have to do, that's what we'll do." We're still living with the Carnegie unit. It has nothing to do with the way people learn or organizations are learning. It was simply a convenient way of defining what people should do in college. We're living with those things today. Historically, these things were created for another age and for another purpose. Schools are essentially the same today.

I probably lived through more educational changes—I'm going to make a guess that I'm probably the oldest person here—I've lived through more educational changes than anyone in the room. Every one of those changes virtually has died. They've come, they've been very popular, they've looked very successful, but they've all disappeared. The first one I was involved with was John Dewey's "progressive education." When I first entered graduate school my adviser was the secretary of the progressive education association. It was dying then. Maybe it was already dead, but there were still people who were lasting in it. So I've been through all these changes and I still don't see anything significant happening to education.

I think probably a lot of people in this room are young enough or old enough to remember—I would say it was in the 60s—SMSG, BSSC, BSCS, was it? Those were well-funded. Millions and millions of dollars went into those. Textbooks were published. Teachers were trained. Very intelligent people thought these were going to be lasting changes in education. I thought, because of the tremendous amount of money the federal government was putting into those programs, that this would last. Does anybody know of any of those lasting today in schools? Are they still with us?

Respondent: Yes they are, and not only that, twenty years later the people who learned that when they were student teachers and beginning teachers are now department heads. So some of the basic ideas behind them are very powerful.

Oakey: Thank you. Are the textbooks still used?

Respondent: Yes, they are.

Oakey: They are? Wonderful. I hadn't run into any sign of them from way back. Let me say, that I don't think they're significant. I think they may still be around, or vestiges of them, but there were still vestiges of progressive education when I went to graduate school. Now, I've tried to study this, and I don't know if I have the answers but I'm willing to take a risk. I think what we can say is Horace Mann lived in the buggy age, the surrey age if you wish, and he really created a great surrey. It's lasted, it's affected education all over the world. Because it was so effective, almost every other country in the world has copied it with maybe some modifications. Someone was saying the other day that the Japanese feel that their system is in crisis, and the Europeans feel that their systems are in crisis. It's basically because their systems are patterned after ours and ours is in crisis. And you labor hard to make changes that are peripheral to the buggy. As you change math and science, you're putting new wheels on and those wheels are great but it's still a surrey. I think we have to just stop somewhere and look at the system that is delivering these content areas and see what we can do about the system.

Last night business was characterized as the cash cow, and it was said, "Go form partners with a cash cow and get some of that cash." It was put in the context that you could rob banks and get away with it. I don't know if you intended that we should rob businesses. Businesses have been doing that, already! Schools have been coming to the cash cow and asking for cash, and it's been invested in schools, and the schools are still essentially the same. Businesses are still not getting the kind of workers that they're looking for. So, businesses are not happy, and the more I talk with business, the less I find them happy at being asked for money. Our company probably gets three or four letters a week asking for donations. I get calls all the time from schools asking us to donate software. We don't mind donating; what we want to do is donate where it will make a difference. So, if you just write and say, "We bought twenty computers, but we don't have any software for them. Please give us some software," my question is: "Why? Do you think IBM has to eat and we don't?" We have to realize that businesses can't continue to just give.

Businesses, however, are very concerned about the state of education and willing to work on it. As you read the last issue, or I guess it was the July 1990 issue, of *California Business*, they're talking about business philanthropy and they're moving into what they're calling strategic philanthropy.

I'm going to take the rest of my time to talk about what it is we're going to do with our philanthropic funds. We're establishing a new foundation that we're going to call the National Center for the Information Age and Education. It's going to be a very high-risk operation. We know that some of the new technologies are as effective in imparting knowledge and wisdom as human beings are. We think human beings have a much higher purpose than imparting knowledge and wisdom and that is in getting into the inter-human or interactive kinds of things that are necessary in education. So we're going to establish a national center to look very significantly at how education might be totally restructured. We're not going to approach it through the educational institutions because they seem to be the people that have the power to suck out all this energy and convert things to their own will.

I'm working with panels of governors on manufacturing technology in the states. These same governors are extremely concerned about workforce issues, so we're going to see if we can't establish eight or ten learning centers nationally. These are going to be cradle-to-grave education. They're going to be highly technology based. They're going to be accessible ten to fourteen hours a day, probably 365 days a year. Any place where you have access to a telephone line you'd be able to access information that will improve your performance or your knowledge. Call it cradle-to-grave if you wish. We also will be developing four-year educational programs, the equivalent to grades eleven through fourteen—it could be called "tech-prep," but highly automated. Students may move through the program based on output measures, and not input measures. The input measures are how many hours you work. Let's say you have several input measures. You get the same curriculum. You get the same hour. You get the same teacher. But what we do with students is say, "We're going to grade you on a curve. That means that some of you are already past failing and some of you are really very good." Well, we ought to say we want everybody to be very good. And we will spend more time with you if necessary and some people may finish a lot earlier than others. But we want output measures rather than input measures.

What we want to do is coalesce business, foundations, state legislators, and a whole lot of other people to say, "Let's make a try." It's a high risk, a very high risk. But it's my last time around. I want to change education and, by God, I'm going to put a lot of energy into it.

Beyond the Handshakes

II

Key Aspects of Academic Partnerships

Key Aspects of Academic Partnerships

Overview

This section presents Louis Albert's overview of the status of "the partnership movement," briefly summarizing the results of a survey conducted in 1989 by Franklin Wilbur and Leo Lambert. Albert, who is vice president of the American Association for Higher Education, points out that academic collaborations exist in every state, and involve the full range of postsecondary institutions. They most typically target elementary and middle schools, and the curricular areas of mathematics, science, and writing.

In their survey, Wilbur and Lambert identifed four categories of collaborative activities: programs and services for students; programs and services for educators; coordination, development and assessment of curriculum and instruction; and programs to mobilize, direct, and promote sharing of educational resources.

Albert reports that contributors to the partnership movement include several national, regional, and statewide organizations, as well as state lawmakers and private foundations. (He does not mention the several federal grant programs that encourage or require applicants to propose collaborative arrangements between schools and universities.)

In closing, Albert envisions partnerships "as an important means of achieving the particular objectives of improving educational opportunities for students and enhancing student performance." Collaborators regard themselves as part of the continuum of education and recognize that educators at all levels are interdependent and have a shared mission. Albert concludes that the most important contributions of the partnership movement should be a "transformed education profession."

The Partnership Terrain

Louis S. Albert

Over the past decade, large numbers of American colleges and universities have entered into partnership arrangements with schools. Some of these partnerships connect schools with colleges of education, continuing long-standing and traditional interinstitutional relationships. Some, like the Holmes Group or the Coalition of Essential Schools, constitute national efforts to reform the system—through changes in teacher education, through curriculum development, and through school restructuring.

But most of the recently formed partnerships are local, grassroots efforts that place college and university professionals into new and very different relationships with their counterparts in the schools. These relationships are characterized by collegiality and respect, and by the awareness that the partners are acting out of mutual, enlightened self-interest. Unlike the more traditional ways in which colleges relate to schools, the new partnerships are not one-way streets; schools and colleges both gain from their participation in partnership activities.

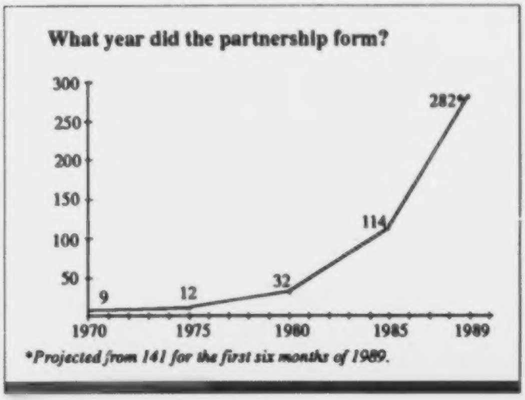
Albert, L.S. (1991). The partnership terrain. *AAHE Bulletin*. Reprinted with the permission of the publisher.

In the new partnerships, all sectors of higher education are involved. Partnerships are just as likely to be found in community colleges as in research universities. And, more often than not, faculty and administrators from the arts and sciences—rather than from schools of education—are the key postsecondary participants in the collaborative process.

National Survey Results

In 1989, Franklin Wilbur and Leo Lambert surveyed colleges and universities nationwide in order to learn about the nature and extent of their partnership arrangements with schools. (The survey was a follow-on to their 1987 survey, the results of which were reported in the American Association for Higher Education (AAHE) publication *The National Directory of School-College Partnerships: Current Models and Practices.*)

From among the 1,286 colleges and universities responding, Wilbur and Lambert selected some 350 profiles to publish in AAHE's 1991 *Linking America's Schools and Colleges: Guide to Partnerships & National Directory.* (The volume also includes directory information for all the respondents.)


What year did the partnership form?

**Projected from 141 for the first six months of 1989.*

Compared with the results of the 1987 survey, the 1989 results reveal a striking increase in the sophistication and quality of local partnerships. They tell the story of a school-college-university partnership phenomenon that is contributing in significant ways to the quality and effectiveness of American education and to improved achievement by students at all levels.

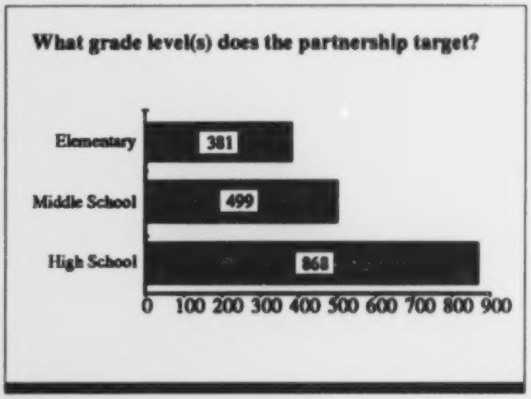
Where are these partnerships? What benefits do they promise for students, faculty, and curricula? Where is the partnership movement headed? The survey results begin to answer these key questions and others.

What kinds of institutions are involved?

The number and variety of partnership activities uncovered in the survey lend support to the observation that we are indeed in the middle of a "partnership movement."

Partnerships are found in every state, in both public and private institutions. Of the 1,286 responding colleges and universities, 882 are public and 404 are private.

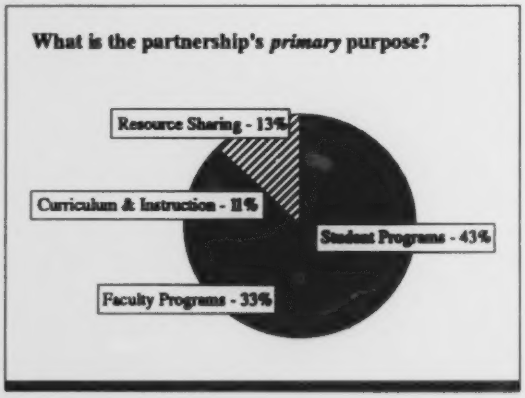
Partnerships target all grade levels; some target more than one grade level. The 1987 *National Directory of School-College Partnerships* reported mainly on high school/college collaboration. The current database indicates that many partnership programs are now aimed at elementary and middle schools, reflecting a growing understanding of the need to intervene on behalf of students in their earlier years of schooling.


What grade level(s) does the partnership target?

When did the partnership movement begin?

Although the survey uncovered a significant number of partnerships more than ten years old (some go back more than twenty years), the mid-1980s marked the beginning of a period of rapid growth in partnership number and variety.

Some people credit the school reform reports, especially *A Nation At Risk* in 1983, with driving the expansion of collaborative programs. Others suggest that colleges and universities, out of concern for potential enrollment shortfalls, entered into partnerships as a way of increasing the number of students in the postsecondary pipeline.


What is the partnership's *primary* purpose?

But, an analysis of the survey responses also points to other, more specific reasons why partnerships form—for example, to improve teaching in science or mathematics, to provide precollegiate on-campus experiences for middle school students, or to design and implement a multicultural curriculum.

What purposes do partnership programs serve?

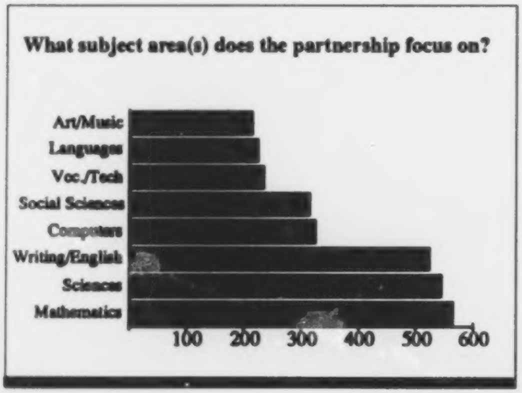
Survey respondents were asked to identify the primary focus or purpose of their partnership activities. Their responses fall into four categories: (1) programs and services for students; (2) programs and services for educators; (3) coordination, development, and assessment of curriculum and instruction; and (4) programs to mobilize, direct, and promote sharing of educational resources.

Programs and services aimed at providing direct services for students include a large number of early identification and early intervention programs, programs that bring K-12 students to college and university campuses for enrichment work during the summer, after school, and on weekends. Many of these programs connect student achievement in school with the promise of college scholarships.

Programs for educators typically are directed at the professional development needs of faculty and administrators. Faculty and administrators also are deeply involved in partnership activities that focus on curriculum and materials development. The resource-sharing partnerships often take the form of interinstitutional consortial arrangements or "adopt-a-school" programs.

What subject areas do partnerships focus on?

Respondents were asked to indicate whether their collaborative programs focus on specific subject areas. Many reported more than one area of concentration, with mathematics, science, and writing leading the list regardless of whether the partnership targets high school, middle school, or elementary school teachers and/or students.



National, Regional, and State Advocates

While most partnerships are clearly local in origin and scope, a number of national, regional, and statewide organizations are important contributors to the partnership movement. These advocates for collaboration, as part of their larger efforts to improve student achievement through improving teaching and learning at all levels, often support local collaborative programs.

At the national level, the advocates include organizations such as The College Board, the National Association of Secondary School Principals, the Council of Chief State School Officers, and the Education Commission of the States and a number of higher education associations, including the American Association for Higher Education.

With funding from the John D. and Catherine T. MacArthur Foundation, AAHE conducts a National Project in Support of Academic Alliances, which are local groups of school and college faculty from the same or related disciplines who meet regularly throughout the academic year. In cooperation with The College Board, AAHE also runs an annual National Conference on School/College Collaboration, through AAHE's National Office on School/College Collaboration.

The regional accrediting associations are getting into the business of encouraging collaborative programs, too. In 1990, the New England Association of Schools and Colleges (NEASC) started a full-time Office of School/College Collaboration. In 1989, the Middle States Association (MSA) adopted a resolution encouraging development of academic alliances and other forms of collaboration within its member institutions. NEASC, MSA, and a number of other accrediting associations are talking about how to encourage colleges and schools to include collaborative activities in their accreditation self-studies.

And support for partnership activities is growing at the state level. Since the mid-1980s, the California Academic Partnership Program has funded a number of innovative projects. New Jersey, Tennessee, Arkansas, Virginia, Wisconsin, Ohio, Georgia, Texas, North Dakota, Minnesota, New York and Massachusetts, among others, have supported partnership programs at the state level.

No list of advocates for collaboration would be complete without mentioning the discipline-based faculty professional societies. The American Physical Society is an active supporter of academic alliances and other collaborative activities. In addition, a variety of programs and/or statements of support have been developed under the auspices of the American Historical Association, the Mathematics Association of America, the American Chemical Society, the National Geographic Society, the National Science Teachers Association, and the Modern Language Association.

Foundations also have played a major role in shaping the partnership movement. Many programs owe their origins to the Ford Foundation, the Rockefeller Foundation, the John D. and

Catherine T. MacArthur Foundation, or the Carnegie Corporation of New York. Government-sponsored foundations such as the National Science Foundation and the National Endowment for the Humanities have played similar supportive roles.

Where Is the Partnership Movement Going?

Partnerships are not an end in themselves. But, increasingly, partnerships are being seen by faculty, administrators, and community leaders as an important means of achieving the particular objectives of improving educational opportunities for students and enhancing student performance. And in the process, the educators who work collaboratively with one another are redefining the profession of teaching.

They see themselves as part of a single system of education stretching unbroken from kindergarten through graduate school. They have gained new respect for the sophistication and complexities of the teaching and learning process at all levels, because in successful partnerships a faculty member's level of professionalism is not seen as inversely proportional to the age of the students being taught. And they have formed new professional relationships with one another based upon a sense of interdependence and shared mission.

A transformed education profession should prove, in the long run, to be one of the most important contributions of the partnership movement.

Commentary on the Overview of Academic Collaborations

Louis Albert has provided a succinct overview of the purposes, the direct participants, and the advocates of academic collaboration. His paper also suggests basic goals for the advancement of academic collaborations. In the following comments, with apologies to Albert, we transform his descriptions of trends into ten goals for academic collaborations:

Goal 1. All colleges and universities, public and private, should engage in academic collaborations.

Goal 2. Collaborators should focus on elementary and middle schools.

Goal 3. Collaborators should focus on improving curriculum and instruction, and on students' preparation for postsecondary education, rather than on recruiting students into the participating colleges and universities.

Goal 4. Collaborators should provide services to teachers, provide services to students, improve the curriculum, or share resources, or combine two or more of these activities.

Goal 5. All educational organizations, philanthropic foundations, regional accrediting associations, states, and discipline-based faculty professional societies (among others) should advocate and support academic collaborations.

Goal 6. Faculty, administrators, and community leaders should recognize academic collaboration as a potentially important vehicle for improving educational opportunity and enhancing student performance.

Goal 7. Educators at all levels should recognize that they are "part of a single system of education stretching unbroken from kindergarten through graduate school."

Goal 8. Educators should develop their sense of "interdependence and shared mission."

Goal 9. Educators should respect the "sophistication and complexity of the teaching and learning process at all levels."

Goal 10. Educators should design academic collaborations ultimately to transform the education profession.

Each of these goals suggests a need in a particular area. We would not need a goal for developing a sense of interdependence and shared mission, for example, if educators at all levels already understood their relatedness at more than an intellectual level.

In this sense, Albert identifies current weaknesses in the relationships between educators in schools and universities. For example, university faculty are more resistant to commitments to collaborative arrangements than are school faculty. Their resistance typically does not reflect a lack of awareness of, or caring about, the importance of precollege education. Rather, university faculty (excepting those in education) are cautious about "getting involved" in schools primarily because their employers have assigned them to pursue other priorities, and will not reward them for working with schools. Even faculty in education may be cautious about participating in academic collaborations that do not involve theoretrical research or the education of university students.

University administrators—and faculty who evaluate the performance of their colleagues—should not be faulted casually for questioning the involvement of university faculty in university-school collaborations. The responsibilities of university educators are great enough to inhibit their adopting substantial new roles in the strengthening of precollege education.

This circumstance suggests that educators should define the long-term goals of the partnership "movement," perhaps by extrapolating today's trends, and move toward those goals. At present, academic collaborations are often tentative, short-lived, and supported by small groups of faculty at the school and the university.

As their grants expire, or as their other priorities demand attention, the collaboration fades, leaving little trace of its existence.

Educators should consider modifications in the university's long-term goals and priorities. Indeed, Albert suggests that academic collaborations eventually could "transform the teaching profession." Today, the teaching profession is organized by grade level, and, beginning with the middle grades, by academic discipline. We might contemplate the possibilities for transformation of this scheme.

For example, a transformed teaching profession might involve university-based, highly educated science and mathematics educators in career roles for improving precollege education in these fields. A university professor of physics, for example, might both teach undergraduate and graduate students, and, as a regular part of his or her assignment, develop curriculum materials, train teachers, teach students, and otherwise participate in precollege education, with a portion of his or her salary paid by the schools.

As a logical extension of that idea, we might even envision a regional educational agency that provides educational services at all levels, from preschool to graduate school, and that organizes itself according to broad subject areas, rather than grade levels. In that hypothetical environment, we would define an educator's role in terms of subjects taught, rather than grade levels taught.

We might regard such radical transformations as infeasible or even undesirable. Certainly, there are countless barriers to their achievement, too many to examine here.

Our point is that, in our efforts to foster and improve academic collaborations, we tend to focus on the next incremental step, rather than on the longer perspective that could reveal the roots of slow progress. We should pursue short-term goals for academic collaborations in the context of longer term goals. Our longer term goals in this area should describe imaginative new roles and responsibilities for colleges and universities—as institutions—in the conduct of precollege education.

The Culture Gap

Most university–school collaborators recognize that the cultures of the university and the school are indisputably different, and acknowledge that these differences can be barriers to successful collaborations. Rather than simply accepting these differences as a "fact of life," we should seek to understand them as the first step in minimizing their potentally negative effects.

In the following paper, Susan Brookhart of Duquesne University and William E. Loadman of The Ohio State University provide insights into these cultural differences. They provide a significant contribution to the sparse literature of this important aspect of university–school collaborations, and should stimulate collaborators' thoughts.

Here is the authors' abstract of this paper.

> Collaboration between university and public school educators is a strategy which has recently gained support as a part of the teacher education process and as a viable area in which to conduct research. This paper defines the concept of the culture of educational settings and asserts that school–university collaboration occurs in the intersection of two cultures. Descriptions and evaluations of various collaborative projects are reviewed, along with related literature. Four dimensions of the culture of educational settings are important in descriptions of the nature of collaborative work. The dimensions are as follows: (1) work tempo and the nature of professional time, (2) professional focus, from theoretical to practical, (3) career reward structure, and (4) sense of personal power and efficacy. Evidence is cited to support that educators who have participated in collaboration gain insights into the nature of their own and fellow educators' orientations with respect to these dimensions.

The authors provided a further presentation of this argument in:

Brookhart, S. M. & Loadman, W. E. (1990). Empirical evidence that school–university collaboration is multicultural education. *Teaching and Teacher Education*, 6(2): 149–163.

School–University Collaboration: Why It's Multicultural Education

Susan M. Brookhart and
William E. Loadman

Universities and public schools share the same overarching goal of furthering people's learning, but they have two different cultures (Sarason, 1982). In order for meaningful communication to occur between them, participants in school–university collaboration must understand the perspectives of both university and public school educators (Gifford & Gabelko, 1987). Such "cross-cultural" understanding is more important for the second wave of reforms proposed in the middle and later 1980s than ever before.

Increasing the amount and quality of school–university collaboration promises to be a way for educators to pursue important goals with integrity between means and ends. Goals like better educational inquiry and higher standards for professional teacher preparation are consistent with methods which actively involve both university and public school educators, since research and professional practice bear directly on what goes on in both kinds of

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Brookhart, S. M. & Loadman, W. E. (1989, March). School–university collaboration: why it's multicultural education. Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, California. (ERIC Document Reproduction Service No. ED 308 147). Reprinted with the permission of the authors.

institutions. Recently proposed educational reforms call for schools and universities to interact at a deeper level than they currently do. The purpose of this paper is to assert that two cultures do indeed interact in the conduct of collaborative school–university programs. Since this is so, it is instructive to describe and understand some of the cultural forms or shared frames of reference which characterize the two settings. This paper will therefore review literature about schools and universities and about their working together. Four dimensions, perspectives, or themes underlie this literature. These four dimensions serve as organizing principles for much of what has been written about what it is like to work in universities and public schools. The sense a person makes out of life and work at a university differs, at least from these four perspectives, from the sense a person makes out of life and work in a public school. The dimensions, defined in more detail below, are as follows: (1) work tempo and the nature of professional time, (2) professional focus, from theoretical to practical, (3) career reward structure, or what is rewarding in one's educational setting, and (4) sense of personal power and efficacy, or the connection one perceives between one's educational efforts and intended outcomes.

The sense a person makes out of life and work at a university differs, at least from these four perspectives, from the sense a person makes out of life and work in a public school.

Three kinds of introductions will set the stage for the presentation of evidence for four dimensions of culture in educational settings. First, educational reform as a topic in current events is reviewed briefly. The treatment here will be brief because so much has been written elsewhere on this topic, but it must be mentioned because educational reform proposals calling for more school–university collaboration were the reason for this look at the literature in the first place. Second, the definition or theory of culture which the authors of this paper use is set forth. This section thus examines the theoretical framework into which the four dimensions and relevant literature are fit. Third, school–university collaboration is defined for the purpose of this paper, and a review of the treatment of the concept in the writings of others is given.

Educational reform, educational cultures, and school–university collaboration were the three key concepts the authors held in mind as they reviewed and synthesized the literature. The four dimensions are constructs discovered in the literature. These four dimensions are not new concepts, but to the authors' knowledge they have not previously been identified, labeled, and discussed with respect to the intercultural nature of school–university collaboration.

Educational Reform in the 1980s

Goodlad (1984, p. 57) referred to what he has called the "education gap: 'the distance between man's most noble visions of what he might become and present levels of functioning.'" In the first part of the 1980s, states passed legislation about teacher certification, competency testing, and accountability which has been called the first wave of the educational reform movement of the 1980s. These legislative changes happened at the same time as the public and the educational community were reading the National Commission on Excellence in Education's *A Nation at Risk* (1983). What is needed, it said, is for American education to be the best in the world. Settle for nothing less; perseverance can make it happen. The report cited declining test scores, illiteracy rates, and "cafeteria-style" curricula as evidence for a declining trend in the quality of American education, "a trend that stems more from weakness of purpose, confusion of vision, underuse of talent, and lack of leadership, than from conditions beyond our control" (p. 15). If this were the problem, the first wave of '80s reforms was to be the solution: a workout program for flabby thinking muscles, with basic skills instead of push-ups.

What is needed…is for American education to be the best in the world. Settle for nothing less; perseverance can make it happen.

The legislative changes slowed in the middle of the decade (Pipho, 1986). But the atmosphere of discontent with the educational system persisted. A second wave of educational reform proposals, much more sophisticated than the first, called for changes in an interconnected set of institutions. The Holmes Group report concentrated not on the shortcomings of student achievement but on the shortcomings of teacher preparation institutions and the teaching profession they feed (Holmes Group, 1986). The Carnegie Task Force on Teaching as a Profession used an economic argument to arrive at similar suggestions (Carnegie Forum 1986). Goodlad's study *A Place Called School* (1984) called for changes in the structure and content of schooling. State governors drafted a plan of their own, *Time for Results* (1986). There were other reports, too.

Urging educational reform is not new in this country. Since the last century, American education has been taken to task for not accomplishing those noble ideals to which Goodlad referred. John Dewey established his laboratory school at the University of Chicago before the turn of the century. Henry Holmes worked on changing teacher education at Harvard University in the 1920s. In the 1950s, the launch of Sputnik prompted the introduction of the New Math and national legislation to put money into educational research and program development. The ten years after the Elementary and Secondary Education Act of 1965 were so busy with programs and changes that they were dubbed the "decade of reform."

What is interesting about the second wave of the eighties' reform proposals is that they take seriously the interconnectedness of the public schools, institutions of higher education, and the community at large. In the vocabulary of this paper, then, they recognize that intercultural understanding is a prerequisite for implementing all these reforms, including increased school–university collaboration. The next section of this paper will describe this use of the concept of culture, the thoughts and actions with which people ascribe meaning to their experiences and within which they construe their own and others' conversations and activities.

In a culture where the teacher is the center of the mini-universe called a classroom, it makes no sense to ignore him or her.

Culture

No one would argue that universities and public schools are both institutions within a larger "culture" in this country. Some have, however, argued that the persons within these institutions share enough specific interpretations of words and actions that the concept of culture is not too large or too strong to accurately suggest the nature of these frames of reference (Sarason, 1982). This reasoning works to explain, for example, why '50s-style "teacher-proof" curricula often failed to catch on in public schools. Ignoring or circumventing the classroom teacher makes sense only in a culture, like that of a university curriculum development lab, where the meaning associated with teacher is that of implementer of curriculum. In a culture where the teacher is the center of the mini-universe called a classroom, it makes no sense to ignore him or her (Sarason, 1982).

Culture is a concept from the field of anthropology. The work of anthropologist Clifford Geertz seems most useful for understanding the thinking of those in education who have pointed out that educational institutions have distinct cultures (see, for example, Sarason, 1982; Feiman-Nemser & Floden, 1986). Therefore, it is Geertz's discussion of culture which is presented as a theoretical base for describing culture in educational settings.

For Geertz, culture is the framework which groups of people construct for themselves to make sense out of social discourse and social behavior. To illustrate, he used the example of a wink, which is only a meaningful gesture in a cultural context. To the uninitiated, a wink is a mere eyelid contraction. Depending on the situation, a wink could be sly, communicating a conspiratorial message, or it could be mocking, as two communicators make fun of an unaware third person. A wink could be salacious, inviting a sexual response, or it could be playful, a harmless flirtation. One could even wink in front of a mirror, alone, to practice and perfect the gesture for use later! The point is that the behavior has meaning in context. This is only possible if one assumes a group of people, all of whom share at least a certain understanding of eyelid contractions (Geertz, 1973, pp. 5-7).

It is the collection of these certain understandings which Geertz defined as culture. His metaphor is eloquent: "Believing, with Max Weber, that man is an animal suspended in webs of significance he himself has spun, I take culture to be those webs, and the analysis of it to be therefore not an experimental science in search of law but an interpretive one in search of meaning" (Geertz, 1973, p. 5).

"...man is an animal suspended in webs of significance he himself has spun, I take culture to be those webs, and the analysis of it to be therefore not an experimental science in search of law but an interpretive one in search of meaning."

Imbedded in this one sentence are three important points about what culture is. First, culture is public. It exists in the transfer of meaning, through either words or actions, between people. Second, there is a chicken-and-egg quality to the way in which behavior and beliefs are behind culture, forming it, and are also the consequences of culture, emerging from it. Third, the proper goal of cultural analysis is description, not prescription. Cultural anthropologists seek to understand the meanings inherent in social actions, not to predict or prescribe what those meanings or actions should be. These three points have implications for looking at educational institutions as well as civilizations, tribes, and nations, the more traditional subjects of cultural analysis.

Culture is public; therefore, it can be studied. Studies of the cultures of educational settings all have in common description of the "web" of meanings within them. Mitchell, Ortiz, and Mitchell (1987) used the phrase "shared frames of reference" (p. 47). Studies of school cultures have not been primarily anthropological (Feiman-Nemser & Floden, 1986), but have used a variety of approaches and methods. Traditional methods of studying culture include various types of observations and interviews. The authors have adapted a traditional method of measuring attitudes, the summated rating scale, to tap shared frames of reference across institutions (Brookhart & Loadman, 1989).

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The beliefs, attitudes, and behaviors shared by those in schools or in universities at once cause and are caused by the nature of life within the institution. To illustrate, a typical school teacher sees his or her own classroom and pupils as the central focus for emotional attachment as well as job performance (Lortie, 1975). This causes the teacher to spend most of his or her time, talent, and emotional energy on the classroom and the children. Because the teacher invests most of his or her energy in the classroom and the children, these become the main focus of and purpose for his or her daily activities. This degenerates into a circular argument if one applies logic to try to explain cause-and-effect relationships.

The perspective of Geertz's interpretive theory of culture helps to redefine the problem. The question is not "which came first, the chicken or the egg?" but rather "how now, brown cow?" What is the situation? What is life like in a classroom? What interpretations do insiders give to various aspects of that life? This paper considers these questions for both school and university people.

The result of cultural analysis should be description, not prescription. The purpose of studying culture is to access the conceptual world of the subjects, because only then can one converse with them (Geertz, 1973). Advocating school–university collaboration assumes conversation is possible between school and university people (Buchmann, 1985). Committees can only plan together if the members understand one another when they talk. People with two different frames of reference within which to understand goals and strategies for meeting them will make slightly different sense out of the same proceedings. For example, at a planning session, a university professor might talk about a curriculum change taking "a long time" to implement. By this phrase, he or she might mean several years. A classroom teacher hearing the phrase might understand it to mean six or eight weeks. Miscommunication can occur where none was intended because of cultural differences. School–university project committees can write their own prescriptions for particular actions if and only if those on each side of the hyphen comprehend one another.

Definitions of Collaboration

Collaboration, as the term is used in this paper, refers to projects in which university and public school educators work together. A fully collaborative project requires input from school and university people in setting project goals, carrying out project activities, and sharing in project benefits. It should be clear from the discussion of educational cultures that collaboration by definition occurs at a point of intersection between two different cultures. This paper identifies four salient dimensions of cultural differences between university and public school educators. Before discussing these dimensions, however, the short definition of collaboration needs to be expanded and supported with a review of the definitions others have written.

Some things have changed a great deal since Houston wrote, eight years ago, "The title of this paper is the sole entry in the University of Houston's library card catalog when one searches the index for resources on collaboration" (Houston, 1980, p. 331). Collaboration has gained support as part of the teacher education process and as a viable area in which to conduct research. Houston noted a lack of research studies on collaboration, pointing instead to case studies of individual "conditions, designs, and dreams" (p. 333). There is still little systematic inquiry into collaboration. But many more descriptions, cases, and projects have made their way into print since such work began. Lieberman and Miller (1984) cited a Columbia University Teachers College effort as the first time they found school district personnel involved in collaborative research. In 1953, school people helped define a research problem and worked on it with university researchers; the process itself was a traditional research paradigm.

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Cooperative collaboration is motivated by enlightened self-interest between individuals.

Schlechty and Whitford (1988) distinguished between cooperative, symbiotic, and organic collaboration. Cooperative collaboration is motivated by enlightened self-interest between individuals. A professor might ask a teacher friend to help with a research project, for example, in return for providing some classroom materials. Symbiotic collaboration involves institutions working together, each on its own agenda. For example, student teacher placement serves university educational goals while also providing university fee waivers for school district personnel. Organic collaboration, in which two institutions join together to set mutual goals, is more difficult. This is the kind of work that has been receiving attention recently as a potential source of improvement for teacher education and staff development, as well as research, and it is similar to the definition of collaboration used in this paper.

Hord (1986) distinguished between mere cooperation and collaboration. She supported collaboration, in which both universities and public schools share in the planning, communication, and support process as well as the tasks and rewards of a project. She noted, however, that collaboration was more difficult than cooperation, the more traditional arrangement in which one organization gets the permission of another to accomplish its agenda.

In the mid 1970s, Tikunoff and Ward developed a model they called Interactive Research and Development on Teaching, IR&DT. They cited the weakness of the linear research-development-dissemination-implementation model, in which the teacher is a rather passive consumer of research and in which the four functions in the process are separated from one another, often by years (Tikunoff, Ward, & Griffin, 1979). They tested their IR&DT model with projects in San Diego and Vermont. The San Diego team investigated a research question about coping strategies for classroom distractions. The Vermont team investigated relationships between teacher mood and supportive instructional behavior.

Tikunoff and Ward (1983) listed six characteristics of fully collaborative research projects. First, the teacher is involved in the process of research. Second, problem definition stems from teacher concerns. Third, decisions are made jointly by teachers and researchers. Fourth, potential application of results is a major concern. Fifth, classroom instruction is maintained. Sixth, all participants, from both the university and the public school, experience professional growth.

Nur (1983) summarized such characteristics. Collaboration for research is a joint problem-solving process in which teachers and researchers work with "parity and equal responsibility" (p. 225). The equality between teachers and researchers to which Tikunoff and Ward or Nur referred is not sameness. The two groups work together precisely because each brings a skill or insight that illuminates what the other does. Each person contributes something different; the parity is equality of rights and responsibilities, not of tasks.

Preservice and inservice teacher education has been another area of interest in collaboration. Parkay (1986) described the nature of collaboration for staff development (inservice teacher education) in a prize-winning program in Southwest Texas. Glickman (1988) described the nature of optimal collaboration between university student teaching supervisors and their cooperating teachers. In each description, the teacher and university educator were equal partners. This involves considerable personal risk. It also invites considerable professional and personal growth as a result of the process.

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Maeroff (1983) reviewed school and college partnerships of several types and noted it was ironic so little collaboration with joint planning was done in the area of teacher preparation. He considered this a logical area for joint efforts. In the instances where schools and university colleges of education did work together for teacher preparation, Maeroff saw five principles at work: (1) agreement about common problems, (2) equality of status for educators, (3) a sharp focus for the project, (4) recognition for participants, and (5) a focus on action and accomplishment, not structure and bureaucracy.

These definitions of collaboration are still more like Houston's designs and dreams than like models or empirically validated constructs. There are two reasons for this: the relatively recent growth of interest in collaboration and the fact that collaboration is still "defining itself" as projects are happening. Empirical evidence that collaboration is a potent strategy and not merely reform rhetoric is just beginning to be available. Stallings and Martin (1988), for example, presented evidence that student teachers from the Houston Teaching Academy, a collaborative urban teacher-training program, improved teaching performance more than control group student teachers and were more likely to choose urban settings for employment.

All of these formulations of what is meant by "collaboration" refer to differences between working as a public school educator and a university educator, although they do not all use the term "culture" to refer to these frames of reference. Four dimensions of professional perceptions are important in descriptions of the nature of collaborative work and in literature about the cultures of the university and public school. The dimensions are as follows: (1) work tempo and the nature of professional time, (2) professional focus, from theoretical to practical, (3) career reward structure, or what is rewarding in one's educational setting, and (4) sense of personal power and efficacy, or the connection one perceives between one's educational efforts and intended outcomes. Educators who have participated in collaboration gain insights into the nature of their own and fellow educators' orientations with respect to these dimensions (Gifford, 1986).

There is evidence in reports about collaborative projects that perceptions in the university and school cultures differ with respect to these four dimensions. Increased understanding about the nature of these dimensions has been reported as a primary result of participating in such projects. Goodlad (1988) and his associates have acknowledged the importance of communication and understanding to the success of school–university partnerships by creating the National Network (of School–University Partnerships) for Educational Renewal.

The four dimensions of the culture of educational settings, and evidence for them, are outlined below. The literature reviewed includes articles, conference papers, project reports, evaluations, and case studies, as well as more basic works on the nature of teaching. The literature includes descriptions of collaborative projects which differed in purpose, scope, and outcomes. Yet across these differences, the four dimensions of work tempo, professional focus, career reward structure, and sense of personal power and efficacy were clearly demonstrated as aspects of educators' work which collaboration emphasized.

Work Tempo

Sarason (1988) wrote that unrealistic expectations of the amount of time projects require in order to make real changes in schools are the biggest stumbling block to institutional change. Work time is perceived differently at the public school and the university. For teachers, there are certain constraints of time, the necessity to do more than one thing at one time, and a building hours and bell schedule definition of time. Public school administrators work on building-hour time, too, but they have some control over it. For university professors, there is the need for review and reflection and less emphasis on a daily routine and regimented schedules. These differences lead to different perceptions of how professional time is used.

A classic formulation of the perception of time for teachers is Lieberman and Miller's concept of "the dailiness of teaching" (Lieberman & Miller, 1979, 1984). The work life of a public school teacher includes many regularities, things that are constant. There are rhythms of days, weeks, and months. Time is limited. Time is also constrained to being spent in prescribed areas: the classroom, the hallway, the lunchroom (Lieberman & Miller, 1979, p. 57-58).

University faculty do not have the same constraints of time as Lieberman and Miller described for teachers. They certainly labor with time schedules, meetings, classes, and due dates, but their time is more likely to be organized by individual calendar than by community rhythms. Time at a university is driven, in general, by quarters or semesters and classes, but it is largely an individual affair, left to the management of the professor. He or she must keep office hours, but the choice of hours is at the professor's discretion. Classes meet, but not back to back and daily as in the public school.

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Research and scholarly activity require time for reflection. It is true that teaching benefits from time for reflection, but it can be done, and often is, without it.

and often is, without it. Original thought, of the sort that is publishable in journals, cannot happen without it. Porter (1987) reviewed the effects of collaborative research at the Institute for Research on Teaching (IRT) at Michigan State University. The teacher collaborators at the IRT teach half-time in their schools and work as researchers on half-time release. They stay with IRT projects an average of three years. Porter quoted the writing of one teacher collaborator, who described the contrast in professional tempo between teaching and research (Porter, 1987, p. 148-149).

> When I joined the IRT, it was almost like entering a foreign culture. The contexts in which teachers and researchers work are dramatically different, and I was struck most by the difference in the tempo of daily life between the university and my school.... The nature of the job encourages teachers to work at breakneck speed. We must confront, often simultaneously, a variety of concerns—those of students, administrators, and parents—that require our immediate attention....
>
> I retained this sense of immediacy when I began working at the IRT. On my first day, I walked quickly into the building and jogged up the stairs at my usual "teacher's clip." I raced toward the set of office cubicles that included mine and sat at my desk, poised for action, ready to respond to the needs of seven or eight people while simultaneously organizing my thoughts for whatever work I was to do....
>
> This work cannot be accomplished within the kind of lockstep schedule so essential at my school. At the IRT, I must adapt my schedule to my work instead of my work to my schedule. I find I need large blocks of uninterrupted time in which to think, discuss, and write about teaching if I am to do these things well.

This teacher, Robert Arndt, had discovered that the use of time for teachers and researchers is different, according to their different purposes. His writing also illustrates that collaboration between schools and universities does involve the intersection of two cultures, as Sarason commented. After exposure to the use of time in the researcher's culture, Arndt came to appreciate differences in tempo and time use between the two cultures.

Time is an important dimension in collaboration for teacher education as well as research. Sparks, Moody, and Johnson (1988) described a collaborative preservice field experience program between Eastern Michigan University and four local school districts. The availability of time for meetings, mentoring, and coaching and the restriction of teacher time was one major issue listed in the program review.

The Brackenridge Forum, a colloquy of Texas teachers, faculty from Trinity University, and several national leaders in education, also noted that time for working collaboratively was a real problem (Brackenridge Forum, 1988). Keating and Clark (1988), reporting on the Puget Sound Educational Consortium, noted that time was more of a problem on the school district than on the university side.

The frames of reference or perspectives on work time, according to these sources, are different for university and public school educators. How fast is "fast"? How many things can one do at the same time? These questions are answered differently in different educational settings.

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Professional Focus

A host of observations supports the idea that professional educators perceive themselves differently with respect to the purpose of their work and their distance from the classroom. "Theory" and "practice" are two traditional names for the ends of a continuum in any field. In school work, the focus of one's educational efforts is partly a function of distance from the classroom. For the classroom teacher, the students and their moment-by-moment activities are concrete, perceivable through at least four of the five senses: sight, sound, smell, and touch. Sizer (1988) observed that there is a "dailiness" to the reality of public school administrators as well as classroom teachers.

No less real but at a different conceptual distance are researchable questions, preparation of lectures, and much of the rest of university professional practice. Somehow, the classroom work of university faculty, teaching graduates or undergraduates, does not have the same immediacy about it as the classroom work of public school teachers. This is probably because college students are adults, and the university teacher is primarily responsible for academic well-being, not lunches and coats or the student parking lot.

Heathington, Cagle, and George (1988) reported evidence for a gap between theory and practice. They collected data about the objectives for collaboratively taught education courses and found that there were areas of difference as well as overlap in objectives for the same courses for university faculty and faculty associates, those cooperating teachers named as adjunct faculty.

Griffin (1983) pointed out that in the past, research has often been done on schools, using the classroom to suit the researcher's purpose without necessarily thinking about the classroom purposes, for example, changing curricula or time schedules. The results have been sometimes to create a dislike or distrust of research on the part of classroom teachers. Griffin saw this unfortunate consequence as a direct result of teachers and researchers not understanding their different perspectives.

There is a nasty side to this misunderstanding of perspectives that has resulted in harsh words. Examples are given here to illustrate what can happen when people with different perspectives assume their positions are correct and other positions must therefore be wrong. People who are busy exchanging harsh words or assuming they own the one correct point of view are prone to experiencing interpersonal conflict. This potential conflict will be heightened when dealing with the complicated business of educational collaboration.

The tradition of setting theory against practice, instead of setting them both together in a variety of educational contexts, has led to comments like Breinin's (1987, p. 16), who considers the teachers' professional perspective the real truth.

> Let me make a prediction. Sooner or later some smart graduate student (possibly funded by one of the teacher unions) is going to write a thesis on the shabbiness of most

> school administration, on the self-serving nature of many teachers of teachers, on the phoniness and irrelevance of most of what passes for "educational research." When that study is finally done, the popular dissatisfaction with teachers will become wonder—wonder that teachers have done as well as they have.

Or consider this story, told by Ann Lieberman (1987, p. 404) about researchers who consider their professional perspectives the only truth.

> I once introduced a doctoral student to AERA [the American Educational Research Association] as a means of expanding her horizons. After four days of sessions she remarked to me, "I believe that if all the schools in America sank in the Pacific Ocean, AERA members wouldn't even blink."

To illustrate that this kind of tunnel vision operates in the field of teacher education as well as research, consider the university faculty member who responded to an educational reform proposal in this way (Loadman, Brookhart & Wongwanich, 1988, p. 5). The teacher educator wrote, "If professional development schools are to be effective, university staff must have some power/authority over teachers and program."

Achieving parity among school and university participants has been one of the difficulties of the Massachusetts Coalition for School Improvement. This coalition teams twenty-six schools and the University of Massachusetts to work on various projects. Despite a stated commitment to the premise of teacher, administrator, and professor involvement and interaction for the service of students, the coalition has had trouble moving university people from the view that they should research findings and develop programs and that schools should implement and consume them (Sinclair & Harrison, 1988). Heckman (1988) reported similar difficulties with the Southern California Partnership, between UCLA and several southern California schools. He noted that matching a project with a university professor's research interest was a useful strategy.

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There is evidence that participation in collaboration can give professionals from each culture more insights into the other's world and help reduce the propensity for tunnel vision.

and help reduce the propensity for tunnel vision. The collaborative model was developed in part to change the focus of educational efforts from the linear research and development model, in which teachers are practitioners who take their directions from theorists, to a model in which theory and practice together inform what research is done (Tikunoff, Ward & Griffin, 1979).

The development of a collaborative model to inform research does not mean that the insights of teachers are better or any more right than the insights of researchers simply because they are closer to the classroom. The two perspectives are different, and using both allows for a richer understanding of educational issues (Hering & Howey, 1982). Teachers contribute subjective understanding of particular contexts: the insider view. University researchers contribute the outsider perspective and a broader context into which to fit the particular ones. Hering and Howey's report includes some inspiring and enthusiastic quotes from members of both groups testifying to their personal and professional growth because of interactions between the two cultures.

These benefits for university educators and public school teachers and administrators who have participated in collaborative efforts, in the form of increased understanding and mutual appreciation of each other's perspectives and work focus, are often touted. Williams and Harris (1984) found one benefit of school–university exchange teaching programs was that university people liked to hear from people working in the public schools. In the San Diego IR&DT project described above, the team reported that participation in the project changed their views of educational research. Teachers reported seeing more validity and usable results from research done collaboratively than traditionally and reported being more willing to change their classroom practices because of such results. Researchers reported becoming committed to a team approach and to the importance of considering development issues from the start (Tikunoff, Ward & Lazar, 1980).

One of the oldest formal school–university partnerships is the Metropolitan School Study Council at Teachers College, Columbia University, in New York City. Lieberman reported one of the learnings and benefits over the years has been the power of doing something together. People from two cultures create a "culture of collaboration" when they set aside stereotypes and work together (Lieberman, 1988, p. 84).

Porter's conclusion about the results of collaborative research, based on the IRT activities at Michigan State University, echoed this theme of researchers and teachers both broadening their perspectives. He cited not only personal growth, but also improved professional practice. Researchers who collaborated improved their research questions, interpretation of results, and external validity of designs. Teachers who collaborated became more analytical and more willing to apply new ideas (Porter, 1987). These gains in validity, broadening of perspective, and appreciation for the culture of both the university and the public school were the results of collaboration for teacher education, too (Szekely, 1981, p. 133).

A broader focus for school principals and university staff happened as a result of a collaborative University of Pennsylvania doctoral program for practicing school administrators. The Philadelphia principals and the university faculty did not always agree, but the result of the program included greater perceived university interest in schools and greater principal interest in research and program change (Botel, Glatthorn & Larkin, 1984).

Teachers who collaborated became more analytical and more willing to apply new ideas.

Where an educator sees himself or herself on the theory/practice continuum, how connected he or she feels to the classroom, and what he or she perceives as the immediate purpose or focus of his or her work constitute an important professional perspective. There is evidence to support that teachers, administrators, and researchers perceive themselves differently on this dimension. There is also evidence that these perceptions are important to the kind of organic collaboration projects which are advocated presently and growing in number. As the dean of the Brigham Young University College of Education, reflecting on the BYU-Public School Partnership, said, "We didn't realize how different we really were!" (Williams, 1988, p. 139).

Career Reward Structure

For school teachers, the primary reward for their work is working with children, "reaching" them, and seeing them learn (Lortie, 1975; Kottkamp, Provenzo, & Cohn, 1986; Loadman, Brookhart, & Wongwanich, 1988). Lieberman and Hiller (1979, 1984) see this as one of the most basic parts of "the social realities of teaching."

There are other rewards in teaching. Lortie (1975) categorized extrinsic, ancillary, and psychic or intrinsic rewards of teaching. Extrinsic rewards are objective ones, like salary, which apply to all teachers. Ancillary rewards are objective but subjective in their judgments as rewards. For example, the summer "off" might be more of a reward to a parent with small children than to a childless person. Psychic or intrinsic rewards are subjective; they differ from person to person. Intrinsic rewards are things which are rewarding because of their subjective value. For example, if one values education, then helping a child learn is rewarding in itself. School teachers in 1964 and in 1984 perceived the intrinsic rewards of teaching as far more important than extrinsic or ancillary rewards (Kottkamp, Provenzo & Cohn, 1986). Teachers can hold this view at the same time as they also feel that teachers' salaries are too low (Loadman, Brookhart & Wongwanich, 1988).

The university reward structure is very different from the public school reward structure. University rewards come in the form of publication, recognition in an academic field, and academic rank. Among university faculty, working in the public schools is often held in low esteem. The amount of time such field work takes is frequently unappreciated (Lieberman, 1980, 1987). Research universities rarely reward field work to the same degree as they reward more traditional research (Lieberman, 1987). Once field work is completed, the opportunities for publishing the results are not good (Reynolds, 1980). Practitioners' magazines are not as prestigious as research journals.

Tenure at a research university "would be hard to come by for assistant professors engaging in long-term, unpredictable, research projects" (Heckman, 1988, p. 119) such as those in the Southern California Partnership. The result in this case was that all active partnership faculty were associate or full professors. Gifford (1986) noted that incentive systems in the two cultures conflict and do not encourage collaboration.

Differences in how teachers and university people perceive the reward structures for their careers do not necessarily mean that they cannot work together. But without an awareness of the differences, they may be expecting different things from projects without realizing it. The teachers who participate in collaborative research may not know what kinds of rewards to expect from research, and may not even perceive them as rewards (Hering & Howey, 1982, p. 66).

McLaughlin and Marsh (1978) reported that in the Rand Corporation's major study of federal programs supporting educational change (Berman & McLaughlin, 1975, 1977), complicated projects requiring more effort and ambition inspired more teacher commitment. McLaughlin and Marsh saw this as evidence that teachers' beliefs that they would teach better and that their students would learn better were motivating. Such improvements were potential rewards teachers considered worthwhile.

It is clear, then, that sense of efficacy is an important variable in teachers' perceptions of themselves at work.

Little (1988) reported a study to assess prospects for teacher leadership. She found teachers only hesitantly approved of a more public and assertive role a master teacher might play. The particular school's history of teacher initiatives made a difference in responses. There was ambiguity in principals' responses, too, as to how much teacher initiative in program and instructional policy would be accepted and rewarded.

Keating and Clark (1986) examined the experience of the Puget Sound Educational Consortium, a partnership among nine school districts and the University of Washington College of Education. They saw the question of rewards for participation in collaboration as a yet unresolved issue. University people tended to continue their customary research methods, not adapting them very much to the context of a partnership, so that they could still publish. Administrators and teachers tended to be personally pleased to work with the projects, but recognition in their school districts was not very noticeable. Each culture was still operating with its own reward structure.

Sense of Personal Power and Efficacy

The Rand Change Agent Study, cited above, has alerted educators to the importance of teacher efficacy in supporting educational change (McLaughlin & Marsh, 1978). Efficacy has since been studied as a teacher characteristic related to student outcome measures and classroom atmosphere (Ashton, 1984) and teacher change (Smylie, 1988).

It is clear, then, that sense of efficacy is an important variable in teachers' perceptions of themselves at work. Lieberman and Miller (1979) noted that teachers often do not feel they have the control they would like to have. In their own classrooms, they have a limited amount of control, based partly on their relationships with their students. The farther from the classroom they get, the less control they have, in the building or the district, for example. Teachers' lack of confidence in the efficacy of their own teaching contributes to the privacy rule described below.

Lieberman and Miller's concept of the dailiness of teaching includes a category they label "rules." The two rules teachers use in their daily work are "be practical" and "be private." Practicality in this sense means placing a value on strategies which are immediately transferable into classroom activity. Immediate, concrete solutions to problems of discipline, order, or achievement, which require no resources beyond those at hand and are not much extra work, are practical. Being private extends practicality into the personal sphere. It is not practical to share with other teachers one's daily experiences or perceptions as a teacher. While this principle means teachers cannot glory in their successes, it also protects them from being found out in their failures (Lieberman & Miller, 1979, 1984). Practicality and privacy rules reinforce the circumstances of public school teaching, in which the teacher is often the sole adult in a room filled with children. The entrance of another adult into the room, or an adult voice on the public address system, can be an intrusion into the practical, private world of the classroom.

University faculty have been observed to be private, as well, but the nature of this privacy is not the same as it is for public school personnel. The organizational culture of a teacher education institution emphasizes individual professional accomplishments over the goals of the institution (Clark & Guba, 1977). Professors are then expected, however, to share these private accomplishments outside the institution, by publishing.

Darling-Hammond (1987) noted the inconsistency in holding teachers professionally accountable for meeting the needs of their students and at the same time defining "professional" teaching behavior as that which is in strict compliance with state directives, courses of study, and curriculum guides. Teachers in Texas often perceive that policy makers and reformers "see them as static, unimaginative, unthinking and uninspired dolts" (Brackenridge Forum, 1988, p. 9), as teachers increasingly are told to standardize both their own practices and student outcomes.

Indeed, Cooper (1988, p. 50) pointed out, talk of teacher "empowerment" highlights the fact that teachers are "political subjects and philosophical objects." If they must be empowered, passive voice, then they can have their power removed as well, by the same authorities who delegated power. Power comes as a result of professionalism; power does not create professionalism (Cooper, 1988). Schlechty (1988), however, argued for just such a reassignment of authority to teachers in order for significant changes to take place. He used as an example the Charlotte-Mecklenburg Schools Teacher Career Development Program. This career ladder program was collaborative in intent but top-down in its management of change.

Power comes as a result of professionalism; power does not create professionalism.

In comparison with teachers, university educators have "the power and status that come with experience and expert knowledge" (Buchmann, 1985). Davies and Aquino (1975) pointed out that when two or more groups get together to collaborate, there is a natural tendency for groups to want to keep what power and status they have. University people are not overbearing bullies; they simply have traditionally more power and status than classroom teachers do (Boyer, 1982).

There is evidence that feelings of shared power and increased professionalism can result from collaboration. Members of both the university and public school cultures have noted this effect. University faculty at the University of California at Berkeley reported greater feelings of collegiality and being part of a larger profession as a result of participation in the School–University Partnership for Educational Renewal (Gifford, 1986). Classroom teachers have reported an increase in feelings of professional competence as a result of collaboration for research (Porter, 1987). This perception

has also been expressed as heightened teacher self-esteem (Gifford, 1986; Lieberman & Miller, 1984). Collaboration for staff development has also been observed to lead to heightened self-esteem. Teacher participants in the Southwest Texas Program for Improving Basic Skills Instruction in the Secondary Schools reported an enhanced sense of professionalism, partly because they felt they were treated as professionals (Parkay, 1986).
Collaboration for curriculum reform has also resulted in an increased sense of efficacy for classroom teachers. Lampert (1988) reported teachers' feelings of self-confidence and professionalism after they participated in a collaborative project to develop mathematics curriculum and pedagogy.

How an educator perceives his or her own power and efficacy is thus an important dimension of his or her professional perceptions. There is evidence in the literature reviewed that the dimension of power and personal effectiveness is an important dimension to consider. Evidence was also reviewed that supported an increase in feelings of professional competence for teachers who worked collaboratively with university faculty.

Conclusions

Universities and public schools are both part of the educational community. The purpose of both institutions is education and understanding, and the heart of both institutions is the professional educators who work in them. An increasingly holistic view of what education should be has informed and inspired a wave of projects, most of them in the last decade, in which educators work across institutions to add depth and scope to their work. Collaboration is an idea whose time has come.

This synthesis of literature on the nature of universities and public schools, and especially literature on the results of collaborative projects, has identified cultural differences among educators. There are four prominent dimensions on which university and public school educators differ. These are (1) work tempo, (2) professional focus, (3) career reward structure, and (4) sense of personal power and efficacy. There is evidence that orientations along these dimensions are important considerations when educators from the two cultures work together.

There is also evidence that participation in collaborative projects, for research or preservice or inservice teacher education, brings professional growth in the form of increased understanding along these dimensions. Lack of growth on these dimensions, for example, lack of trust or the persistence of status differences, is frequently reported as an impediment to collaboration.

It is the thesis of this paper that collaboration is a personalized strategy. It has its roots in the concept that people who are working together in the field of education should, indeed, work together. But those who are likely to be placed in, or elect to participate in, collaborative activities represent two cultures. This insight must form the base from which successful school–university collaboration, including many of the activities in current proposals for educational reform, may be accomplished. Intercultural understanding implies an appreciation of educators' shared frames of reference or perspectives. This paper has demonstrated there are at least four dimensions, frames of reference, or themes which are salient when the topic is school–university collaboration. Indeed, school–university collaboration is, without question, multicultural education.

It is the thesis of this paper that collaboration is a personalized strategy. It has its roots in the concept that people who are working together in the field of education should, indeed, work together.

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Comments: The University–School Culture Gap

Brookhart and Loadman have described four dimensions of the culture of education settings: (1) work tempo and the nature of professional time, (2) professional focus, from theoretical to practical, (3) career reward structure, and (4) sense of personal power and efficacy. In our introduction to their paper, we suggest that university–school collaborators should seek to understand the differences between the cultures of universities and schools and to minimize their potentially negative effects. In fact, collaborators could respond to these differences in at least the following ways.

Convene Enriched Communications

Collaborators could discuss these differences to gain intimate, detailed understanding of the extent to which they are real and immutable. Such discussions should begin separately within the school community and within the university community. Too often, educators—and people in other careers, as well—do not devote sufficient time to examine the dimensions and dynamics of their field and the assumptions that define their working environments. Discussions within each community might focus in turn on each of Brookhart and Loadman's four dimensions to develop explicit statements acceptable to all participants of the current reality of their working lives.

Following these preliminary discussions, educators from both communities should meet to compare notes, ideally in the context of an academic alliance (AAHE, 1985-86). Such discussions should emphasize deeper reciprocal understanding of the participants' respective working environments and the identification and celebration of shared interests and concerns. Shared interests might include, for example, the intrinsic rewards of teaching; many university faculty, as well as school faculty, place a high value on these rewards. School and university faculty also might well declare mutual concerns over the effectiveness of students' preparation for university-level studies, the academic achievement of students in groups that are underrepresented in colleges and universities, and the alarming extent to which our educational system filters students out of the science–mathematics–technology "pipeline." In our own collaborative work, we have heard middle school, high school and university faculty separately identify their greatest concern as the development of critical thinking and problem-solving skills among their students.

These "cross-cultural" discussions also should include the identification and elimination of erroneous perceptions about the participants' respective cultures. Frank discussions of the reality of the school and university cultures in terms of these four dimensions could reveal unfounded assumptions that inhibit productive relationships. For example, one of the CAPP–Eisenhower project participants, a university professor, responded to a high school teacher's comment about differences in university and school salary levels by announcing his salary. It was not only lower than the teacher assumed it to be, but close to the teacher's own salary. The professor reported that, since then, the teachers in that school have accepted him more as their colleague, with positive effects on their collaborative work.

These discussions need not focus on salary levels, and should not become occasions for deciding who has the better environment or for complaining about working conditions.

Examine Prospects for Change

However we might assess the present cultures of the university and the school, we should recognize that they could change, albeit slowly, and thus reduce the culture gap between universities and schools. For example, the faculty reward system in universities (particularly research universities) often is cited as the one most important impediment to university–school collaboration. The common perception (as Brookhart and Loadman noted) is that university faculty are not rewarded with promotion and tenure for working in schools. This perception may be accurate, but even reward structures are subject to change.

The prerequisites of such change might well include reexamination of time-honored views. As a noteworthy example of such a reexamination, Ernest Boyer (1991) addressed "what it means to be a scholar," and identified four overlapping functions of the professoriate: the scholarship of discovery, the scholarship of integration, the scholarship of application, and the scholarship of teaching.

The University of California's Task Force on Faculty Rewards then cited Boyer's book (and called it "a searching and provocative study") in its recent report (Pister, et al, 1991). The task force recommended several changes in the career reward structure for University of California faculty, including greater emphasis on teaching and other forms of scholarly activities. The following statement from that report has particular relevance here.

> The needs of society and the University make it both necessary and desirable to encourage established scholars (those who have already demonstrated the capacity for superior intellectual attainment in teaching and research or other creative achievement) to undertake scholarly activities that more broadly support the University's mission than does the exclusive focus on scholarship of discovery (research). Examples include (but are not limited to):
>
> - *designing and leading major curriculum innovation projects, both in the University and in the K–14 school system;*
> - taking a leadership role in activities that develop human resources, such as mentorship programs for graduate students, junior faculty, and underrepresented minorities;
> - making significant contributions to the achievement of the University's affirmative action, equity, and diversity goals;
> - *applying scholarship to work* with governmental agencies, *educational institutions,* and public service organizations involved in addressing critical societal issues; and
> - serving as an officer in a public agency that enhances the quality of the social product.
>
> (Pister et al. pp. 8–9; emphasis added)

This task force report will be debated in detail and at length within the University of California system. While we cannot predict its formal effect on that institution's reward system, it could well increase the visibility of the (senior) faculty's work with schools and enhance the recognition that flows from that work.

An aspect of school culture that may be in transition today is the teacher's "sense of personal power and efficacy." Restructuring strategies often include expanded decision-making roles for the faculty, and increased emphasis on site-based management. As schools implement such strategies, faculty members could experience increases in the level of control they are able to exercise, especially outside of their classrooms. School faculty might not enjoy the degree of personal power they might prefer (all institutions limit individual freedom to some extent), but they could attain levels of control that are equivalent to those of university faculty (who also work within institutional constraints).

Changes are in progress in the other dimensions of university and school cultures, as well. University–school collaborators could benefit from monitoring these trends and building upon them in their efforts to reach common ground.

Use Cultural Differences to Advantage

Our final suggestion for dealing with differences between the university and school cultures involves identifying and pursuing situations in which these cultures could complement each other. The principal opportunity for such complementarity exists in educational research: Educational practitioners and educational theoreticians could be—and indeed should be—close and frequent collaborators, for mutual benefit.

This is hardly a new idea. For decades, literally, educators have called for closer working relationships between researchers and teachers. Indeed, researchers already contribute countless ideas with practical application in the classroom. Still needed, however, are more frequent dialogues between these two cultures, greater appreciation of the other's professional focus, even more direct responsiveness by researchers to the teachers' concerns and questions, and insistence by K–12 educators that researchers deal with practical issues and, after they "raid" K–12 classrooms in search of data, discuss their findings and conclusions with teachers. We explore this rich opportunity for university–school collaboration further in the comments that follow the paper by the National Academy of Education.

◆

Brookhart and Loadman have contributed potentially useful "handles" for understanding the university–school culture gap and for dealing with it effectively. This gap is genuine, of course, and it undoubtedly will continue to hamper collaborative activities, but prospective collaborators can minimize its negative effects and even maximize its potential benefits. As with other forms of cultural interface, success in university–school collaboration depends upon mutual understanding and respect among the participants. Brookhart and Loadman observe, correctly, that "collaboration is a personalized strategy." The corollary might be stated as "the people in universities and schools—and not their institutions—are the real collaborators."

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Educational Research

The National Academy of Education, an honorary society of education researchers, recently presented a detailed report of its views on the accomplishments and future priorities of the educational research community. In this section, we present the executive summary of that report to represent the perspective of the education researcher on university–school collaboration.

The National Academy of Education (NAE) presents a national agenda for research in education, focusing on the following five priority areas:

- active learning over the lifespan;
- assessment;

- bolstering achievement of historically underserved, "minority," and impoverished groups;
- school organization; and
- connection [of researchers] to teachers and teaching.

The NAE states that research is an essential component of efforts to improve education and cites several examples of research that has guided such improvements. The NAE states, "Education research has led to fundamental reorientations in our knowledge of human development, learning theory and its applications, testing and assessments, the nature of disabilities, and curriculum design."

The NAE then describes current problems in educational research: "The research base is underfunded, limited in focus, and lacks connection to what happens in classrooms. Research studies tend to be short-term and conducted in isolation...." The report points to the decline of public and private support for research in education, and the trend to favor action research, demonstration projects, and evaluation studies, rather than theoretical research.

The report concludes with the NAE's recommendations for action in the areas of funding and support, quality control, organization of research, incentives for researchers, and linking research to practitioners.

Research and the Renewal of Education
Executive Summary and Recommendations

National Academy of Education

As Americans strive to reform and restructure schools and design programs that prepare young people for a new century, education policy and practice must be guided by the best that is known about education and all areas of inquiry related to learning, schooling, and young people.

According to the National Academy of Education (NAE), an honorary society of 75 of the nation's most distinguished researchers and education leaders, current efforts to implement broad-based school reforms without adequate research to guide the direction of change will fail. "Pushing for change without continuing to deepen our understanding of what we are doing will only intensify the problems we seek to solve," the study says.

The study asserts that if we want well-designed institutions, good leadership, high standards, and strong public support for education,

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National Academy of Education. (1991). *Research and the Renewal of Education.* Stanford: The Academy, Stanford University. Reprinted with permission of the publisher.

we need imaginative research that anticipates the future, takes on the biggest challenges, and is funded to support the most promising areas where breakthroughs are likely to occur.

The Academy suggests ways in which the organization and character of research can be changed to improve its application to policy and practice. The report presents a national research agenda focusing on five priority areas expected to spark positive changes in schools. These include:

- **Active Learning Over the Lifespan.** Research must be designed to understand how students can be intellectually engaged and encouraged to solve challenging problems as individuals and as a group—the kind of learning they will use in the real world. Research must focus on ways to help students take initiative, construct meaning for themselves, and develop thinking skills in new and unfamiliar settings. The Academy underscores the fact that learning exists outside of schools and that research must embrace education in its broadest contexts—including learning that takes place within families, communities, and in other settings.

Research must focus on ways to help students take initiative, construct meaning for themselves, and develop thinking skills in new and unfamiliar settings.

- **Assessment.** As educators debate the need for new forms and applications of testing, a major investment is needed to develop new educational assessments. Research should improve the instructional relevance of testing, probe the social contexts of learning, and foster a rich view of thinking and creativity.

- **Bolstering Achievement of Historically Underserved, "Minority," and Impoverished Groups.** More research is needed on the educational opportunities afforded to members of historically underserved, "minority," and impoverished groups, on the implications of their social and cultural contexts for learning, and on the institutional arrangements that prove most effective in expanding educational opportunities for such groups.

- **School Organization.** We need further inquiry into the social organization of schooling and inner workings of schools as institutions. More research is needed to clarify how effective learning is organized, whether within school or beyond. The

Academy notes that the present structure of schools constrains the dissemination of innovations based on research and that new organizational structures hold promise for more widespread use of research.

- **Connection to Teachers and Teaching.** Connecting theory to practice is more than examining instructional effectiveness or devising new forms of professional development. It also means placing research in the service of teaching and school improvement. Teachers and researchers must be collaborators in constant communication with each other, but this will involve new roles for teachers and students, according to the Academy.

The study, funded by the Carnegie Corporation of New York, was directed by Michael Kirst of Stanford University and Diane Ravitch of Columbia University's Teachers College. The executive director and principal writer of the study was Thomas James of Brown University.

The study argues that while researchers have not developed the equivalent of antibiotics or hybrid corn, investigations conducted in universities and in schools themselves have played a crucial role in shaping the structure and content of schooling and in deepening our understanding of the education process. Education research has led to fundamental reorientations in our knowledge of human development, learning theory and its applications, testing and assessments, the nature of disabilities, and curriculum design. "Education research has led schools to turn 'good' practice into 'best' practice," the report says.

Education research has led to fundamental reorientations in our knowledge of human development, learning theory and its applications, testing and assessments, the nature of disabilities, and curriculum design.

Today, researchers are bringing new understandings in areas such as the process of reading, the craft of writing, the growth of reasoning skills, and the nature of cultural differences in learning that are leading to significant improvements in education. In addition, research is helping to shape public policy, such as in the design and implementation of mandates for equitably financed school systems in the states.

The Academy argues that the answers to our education problems lie in creating new connections between what is discovered through research and what schools and teachers do in their policies, procedures, and instructional practices.

In comparison with fields such as defense, health care, energy, and agriculture, the nation spends little on disciplined inquiry and research-driven experimentation for improving education.

But the promise of research in shaping educational change, the Academy notes, is limited by constraints within and outside the research community. The research base is underfunded, limited in focus, and lacks connection to what happens in classrooms. Research studies tend to be short-term and conducted in isolation, the report says.

The report provides concrete examples of some of the best research that has been done in the past 20 years, pointing to major breakthroughs influencing schooling and classroom practice, including cooperative learning, school finance, reading and writing, educating students with disabilities, grade retention, and testing.

The report notes that current efforts to change the way schools are organized and administered could provide new opportunities for these research findings to be spread more widely throughout the nation. But research cannot advance the process of change unless there is adequate funding for investigations.

Funding for research through the National Institute of Education (NIE)—for many years the largest source of research support—has been decimated since 1973, the peak funding year. Between 1973 and 1986, the year the NIE was eliminated, funding dropped nearly 80 percent before being adjusted for inflation, and there has been no significant increase since the NIE was replaced by the Office of Educational Research and Improvement.

Depending on how research activity is defined, the U.S. Department of Education spends between 100 and 200 million dollars for research through its principal units established for that purpose. In comparison with fields such as defense, health care, energy, and agriculture, the nation spends little on disciplined inquiry and research-driven experimentation for improving education.

Research initiated and designed entirely by scholars in universities, school districts, and other agencies is grossly underfunded. Only $2 million of the 1992 budget request for the Office of Educational

Research and Improvement covers field-initiated research, and even this small amount represents a 100 percent increase over last year. Consequently, the entire field-initiated research program of the Department of Education supports about 15 to 17 one-year grants.

Foundations, which have the power to spark innovation by setting funding priorities, tend to fund "action projects" that can be widely franchised with limited research on comparative effectiveness and affordability. Several leading foundations that previously championed research have withdrawn support in favor of these demonstration projects that do not examine which aspects of the projects are or are not successful and the conditions necessary to allow such experiments to flourish.

According to an NAE survey conducted for this report, less than four percent of grants from 28 major foundations are targeted for education research. Less than 15 percent of grants categorized specifically as education-related goes to education research.

One of the major problems in research is that few policy makers understand what comprises good research. In policy and funding circles, R&D often signifies "replication and dissemination" rather than "research and development," the report says. Much of our research is really government-funded evaluations of existing programs or monitoring small-scale pilot projects.

One of the major problems in research is that few policy makers understand what comprises good research.

Recommendations for Action

The NAE report presents a clear national agenda for education research that can make a profound and lasting contribution to constructive educational change. The Academy seeks to create a bolder, more forward-looking agenda focused on thoughtful inquiry in high-priority areas.

The following recommendations go beyond "what" needs to be studied to examine "how" the education research enterprise can be strengthened through specific actions to increase funding and support, improve quality control, better organize research support, provide stronger incentives for researchers, and infuse the best that research has to offer into policy and practice.

Funding and Support

The Academy recommends that overall research funding for education be increased from current expenditures. Today education research receives only about one half a percent of the total aggregate $300 billion spent on U.S. educational institutions at all levels (about $150 million). Many knowledge-producing industries spend anywhere from 4 to 6 percent of their operating budgets on research and development.

The federal government, foundations and corporations, and state governments that provide the majority of research support should target much of their increased spending for research to the areas most likely to lead to school improvement—new research on assessment; active learning across the lifespan; the achievement of disadvantaged, underserved populations, and minority groups; school organization; and connecting research to the work and lives of practitioners.

Quality Control

The need for consensus building and developing quality control for research is especially important today as society continues to devote substantial resources to experiments in educational change.

To control the quality of research and advocate its importance in policy, the NAE urges further study on the viability and value of a National Panel of Reviewers to advise the federal R&D effort, proposing consensus on what is known and recommending new studies to close gaps in the research base. The panel would deliberate with educational scholars and practitioners on the meaning of the existing research and clinical findings and propose guidelines for practice. Funded by public and philanthropic sources, the panel would be analogous to panels in other professions that make authoritative statements about the results of research.

The panel would recommend ways of ensuring greater quality control in research on education while also creating more comprehensive and imaginative strategies for research support.

Organization of Research

The NAE believes that to improve the federal role in education R&D, a better balance must be achieved between research initiated by federal agencies for research centers and regional laboratories, and research initiated by scholars in the field. Field-initiated research must be bolstered to help stimulate imaginative responses to education problems and spark new and unexpected approaches to teaching and learning. Many of the areas of research where great successes have been made, such as in studies of student retention and in the education of children with disabilities, have emerged directly from research initiated by scholars in the field.

Other areas of remarkable progress in the past two decades, such as cooperative learning and reading, have benefited from both programmatic research at federally supported centers and field-initiated investigation.

Educators and policy makers must address serious education problems in a systematic fashion over a sustained period at reasonable funding levels. We must provide adequate support for federally authorized and funded research, particularly in fields where problems have been well identified and a strong community of researchers has developed a range of approaches. The proper development of a new national system of examinations, for example, is likely to emerge from combinations of federally authorized research and field-initiated research.

While the report did not seek to make specific recommendations on the organization of research support at the federal level, NAE surveys of researchers, academic administrators, and others revealed widespread concern about federal research administration. According to survey respondents:

- National research policy should be designed to encourage strong inter-agency arrangements and to integrate education research goals with other social, economic and health services.

- Federal sponsors of centers for research and development should make larger and longer commitments for study and experimentation on critical issues in American education.

Educators and policy makers must address serious education problems in a systematic fashion over a sustained period at reasonable funding levels.

- Federal research sponsors should permit more latitude for the initiation of research agendas from outside of the government's decision-making agencies, devoting more funds to field-initiated studies and basic research to generate new insights concerning education.

- A renewed federal role in research, along with an increased role by the states, will be needed to support the large-scale studies required in conjunction with efforts to restructure and improve schooling.

- There is a need to expand and stabilize support for long-term data collection efforts in which multiwave, large-sample surveys should be combined with close-in field work studies of schools and classrooms.

- There should be an equitable division of federal research funds to support (1) research centers to carry out long-term studies on issues of perennial concern, (2) grant programs targeted at emerging issues, providing funds for smaller scale, shorter studies; and (3) a program to support field-initiated studies.

- Priorities should be built around pressing problems where there is a likely research payoff and promising strategies are suggested, including the establishment of working relationships among researchers, educational practitioners, and policy makers.

- Clear incentives are required if researchers are to be engaged seriously with educational practitioners, and concomitant incentives will be needed for school districts and even for state agencies to collaborate on research and development.

- In addition to centers, labs, and field-initiated research, incentives should be given to states and districts to mount coordinated efforts with scholars and scientists; policy making for national and state entities should consider the establishment of sites where research, development, and practice can occur as an integrated whole.

- To avoid the danger of politicization at the federal level, a model similar to that of the National Science Foundation with a distinguished governing board is worth exploring for research on education.

- As conditions of funding, agencies could require more long-term projects, more coordination among research projects and between research and development projects, and a certain proportion of the research aimed directly at altering practice.

- The federal government can help to build emerging fields of research as well as promising lines of policy and program development by investing in centers of excellence, including expanded support of graduate students and postdoctoral fellowships.

New incentives are needed to draw talented young people into the field of education research, including scholars from disadvantaged and minority groups.

Further study and discussion, involving many other organizations and agencies, will be needed to reach firm conclusions. The Academy is firmly committed to supporting that process, particularly the Committee on the Federal Role in Educational Research, recently established under the National Academy of Sciences.

Incentives for Researchers

New incentives are needed to draw talented young people into the field of education research, including scholars from disadvantaged and minority groups. Colleges and universities must do more to support, recognize, and reward education research by providing new or additional incentive grants, fellowships, summer stipends, travel allowances, and awards for special projects aimed at addressing problems of educational practice, both within and beyond academic institutions. Academe can make a major contribution by giving added weight to field research and contributions to practice in tenure decisions.

Foundations can develop programs to support young researchers, particularly for research efforts aimed at promoting school improvement or addressing the five research priorities outlined in this report.

Corporations, and knowledge-based corporations in particular, might wish to sponsor new research fellowships in collaboration with universities and local school districts as a gesture of support for the research enterprise and out of their commitment to school improvement.

Linking Research to Practitioners

To continue the transformation of schools where the best practice occurs routinely in every classroom, new and lasting connections must be developed between researchers, policy makers, and school practitioners.

Teachers and other education practitioners need to become active partners and critical users of education research. Without such partnerships research remains ineffectual.

Overall, there needs to be much more cross-fertilization of ideas and findings between researchers, teachers, and other groups. Funders can insist that experimental programs have strong research components and that the studies they support address how the investigation might affect policy and practice. What are the broader questions the research helps to answer? How does the study advance what we already know and lead to improvement? These questions and examinations of the factors leading to success and failure are likely to stimulate future improvements in research and education.

Funders must also support longer-range studies so that complex agendas of inquiry and action can achieve some of their objectives before being cast aside. Stronger incentives must be created for translating research findings into workable adaptation models in policy and practice across different settings. And we need better mechanisms for consolidating scattered research efforts and communicating them authoritatively beyond specialized communities of scholars.

Consensus-building panels and other forms of deliberation can be useful in drawing together different strands of research and to pressing for integrated concept development that will support improvements in policy, practice, and public understanding.

Comments on Research and University–School Collaboration

Research in education may be one of the most diverse fields of research, encompassing a staggering range of topics from cognition and human development to organization theory and finance. The multifaceted character of research in education of course reflects the complexity of the educational enterprise, which seeks to instill knowledge, skills and attitudes in students at all ages.

The diversity of research in education also reflects the continuum from theoretical to applied studies, all of which can be described as "organized inquiry." Depending upon one's working definition, any thoughtful observation of educational activities—whether by practitioners or theoreticians—can be characterized as some form of research in education.

The products of this very diverse field of endeavor are also quite diverse: They include trivial exercises and studies of considerable value, with countless examples between these extremes. The detractors of research in education will point to the studies that examine issues that have little apparent relevance to classroom realities, and the supporters (such as the National Academy of Education) will point to the useful insights that researchers have reported over the years.

In these comments, we focus on collaboration between practitioners and theoreticians in the planning, conduct, interpretation, and

The "research gap" may reflect differences in the ways that teachers and researchers formulate questions about the learning process.

application of research in education, which may be the single most important issue of this field today.

The "research gap" in education refers usually to the gap in time between a given advancement of the theoretical frontier and general adoption of classroom practices that reflect that advancement. It also refers to the widely recognized gap in communications between the researcher and the teacher.

The consequence of the "research gap" is, as the National Academy of Education (NAE) acknowledges in this report, that research in education does not have its intended effects: "Teachers and other education practitioners need to become active partners and critical users of education research. Without such partnerships research becomes ineffectual."

Because true collaborations between educational theoreticians and practitioners have been rare, they are both an important potential for university–school collaboration and the potential justification for public and private support of educational research.

Boyer (1990) provides a useful guide for discussion of this issue in his recommendation that universities should evaluate faculty performance in terms of four major dimensions of scholarship: discovery, integration, application, and teaching.

The Scholarship of Discovery

In educational research, the scholarship of discovery (i.e., theoretical research) may be very similar to research in cognitive psychology, in that it addresses the process of learning and the conditions that support or enhance that process. The "research gap" may reflect differences in the ways that teachers and researchers formulate questions about the learning process.

Every good teacher is concerned about every aspect of the student's learning and every factor that influences the student's learning. Researchers, on the other hand, tend to analyze the teaching–learning process into its essential elements, and in the process lose sight of the interrelated nature of those elements. For this reason, the teacher may well be puzzled (or worse) by a researcher's attempt to isolate one environmental influence or one piece of learning.

This same problem arises in evaluation studies that seek to assess the contribution of a given activity on the student's academic knowledge, skills or attitudes. For example, when a university brings a group of middle school students to its campus for a day-long tour, and then tries to detect changes in the students' aspirations for postsecondary studies, it ignores both the brief duration of the intervention and the range of other influences on the students' attitudes. A campus tour is easy to organize, and may be a positive experience for precollege students (especially those who have not previously seen a university campus), but attempts to demonstrate that the tour has effected a lasting change in the students' value systems may well be meaningless.

Traditional methods of research and evaluation might be more productive with more comprehensive and longer-term studies. The NAE, endorsing such efforts, calls for "longer-range studies so that complex agendas of inquiry and action can achieve some of their objectives before being cast aside."

Education researchers also are exploring—albeit rather tentatively—alternative methods of research, such as the use of qualitative data, often in combination with the traditional emphasis on quantitative data. For example, Galligani (1990) employed qualitative methods in evaluating curriculum projects supported by the California Academic Partnership Program. Qualitative research may be more meaningful to teachers, since it mirrors their own approach to assessing the effectiveness of their classroom practices.

The Scholarship of Integration

The scholarship of integration has particular relevance in education, because of the holistic nature of the day-to-day work of education. This form of scholarship becomes important during the initial design stages of a research project. The researcher, interested in building upon and advancing the knowledge gained through previous work, bases the rationale for the planned study on a review of related research. This review typically involves integration of the findings of numerous studies by other researchers, as well as of the researcher's own previous work.

Integration also is involved when the researcher interprets a given study's findings as a contribution to the existing knowledge base. At this stage, the research findings should be reconciled with previous research, either fitted, as a piece in a puzzle, or shown to be inconsistent with, or contradictory to, earlier work.

In collaborative research, the theoretician and the practitioner should work together at each of these stages. They should define the research question in terms of the needs and concerns of the practitioner, review the related research for productive directions for the inquiry, design a research process that acknowledges the holistic nature of education, and interpret the results with reference to prior knowledge.

Such collaboration in educational research could be fruitful, but its success in most cases would require the practitioner to increase his or her familiarity with research methods and study a substantial number of research articles. The NAE addresses this barrier, at least in part, by calling for "better mechanisms for consolidating scattered research efforts and communicating them authoritatively beyond specialized communities of scholars."

Some researchers are responding to this need in a concrete manner by publishing reviews of the research literature on specific topics (see, for example, Dempster, 1991). Such reviews, in publications that are accessible to teachers and school administrators, demonstrate that research can be communicated effectively and should encourage theoreticians and practitioners to engage more in face-to-face dialogues about research.

The Scholarship of Application

If researchers wish to generate greater support for their work from funding agencies and policy makers, they must give more attention to applications of their work in the classroom. The NAE states, "Stronger incentives must be created for translating research findings into workable adaptation models in policy and practice across different settings."

At present, funding agencies are apparently impatient with the progress being made through theoretical studies. As the NAE notes, federal agencies have reduced their support for "pure" educational research since the peak year of 1973 and favored research projects that address priorities that they identify, rather than "field-initiated" priorities. (For some people, only those priorities identified by educational practitioners are "field-initiated"; priorities identified by educational theoreticians are "theory-initiated.") Further, both public and private agencies are favoring action research, demonstration projects, and evaluation studies.

Funding agencies apparently are focused on a search for results in the classroom, rather than for advances in our knowledge of teaching and learning. This orientation might be understandable, given the urgency of needs to improve education (especially for students in underrepresented groups) and the inevitably slow pace of theoretical research in education. By contrast, the NAE's perspective is that "current efforts to implement broad-based reforms without adequate research to guide the direction of change will fail."

Funding agencies apparently are focused on a search for results in the classroom, rather than for advances in our knowledge of teaching and learning.

Educational researchers have produced much of value, of course, but their work probably will never be done. The insights gained through theoretical studies typically point to more studies, in a search for deeper insights and more refined theories, rather than to practical applications.

This pattern reflects both the differences between educational research and educational practice, and the reward system for educational researchers. Collaboration between theoreticians and practitioners could facilitate the application of research findings in the classroom. The faculty reward system must change, however, to provide greater recognition for the researcher's efforts to develop practical applications of research findings. Ideally, educational research should encompass practical applications of findings, to promote a continuing dialogue between the researcher and the practitioner. If only researchers participate in the dialogue about teaching and learning, through their own conferences, books and journals, educational research cannot be more than an academic exercise.

The Scholarship of Teaching

University scholars of education should pursue their research in their own classrooms, as well as in the classrooms of other teachers, through continuing experiments with new approaches to teaching. Furthermore, they should engage their students as partners in this research (not just as "subjects"), and maximize the visibility of their classroom research to scholar-teachers in other fields. This practice could (a) improve the educational experiences of student teachers, (b) prepare student teachers to enter their teaching careers as "teacher-researchers," (c) encourage university scholars in other fields to try new approaches to their own teaching, (d) generate systematic observations that would strengthen research in the field, and (e) provide the researcher with first-hand experience with the practical challenges involved in adopting new approaches to curriculum and instruction.

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The preceding comments have only touched upon a few of the issues associated with research in education, and only suggested the potential benefits of greater collaboration between researchers and practitioners. The National Academy of Education has acknowledged the importance of connecting research more directly with teachers and teaching, and identified this collaboration as one of its five priority areas for a national research agenda. The Academy might well have identified collaboration as the preferred approach to research in the other four priority areas, rather than defining it as a separate priority.

Researchers also should adopt Boyer's conceptualization of the professoriate, to integrate theoretical research and its practical applications as interdependent components of the process of improving education. As that connection is strengthened, both researchers and teachers will benefit.

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Business–School Collaboration

In this section, Frank Newman and Diana Rigden present their advice for successful collaborations between businesses and schools.

Newman, writing from the perspective of the Education Commission of the States, focuses on policies for accomplishing change. He begins by suggesting twelve specific steps that a coalition of business and community leaders could take to initiate a process of change in the schools.

Newman then reviews the multifaceted need for change, and identifies "three significant complications that make school transformation difficult": (a) the dynamic nature of the problem; (b) the increasingly diverse population of students; and (c) the evolution of learning goals.

Next, Newman lists seven strategies that have been found ineffective in business–school collaborations. Generally, these are simplistic, one-dimensional strategies, as distinct from a holistic strategy. He follows this with a list of twelve strategies that research has shown *do* work.

Newman follows this advice with five principles for restructuring education, and concludes that "both the individual schools and the school system as a whole must be held accountable for performance, as must superintendents, principals and teachers."

Rigden's perspective, unlike Newman's, emphasizes local action by businesses and, like Newman's, focuses on restructuring schools. She describes three basic forms of business-schools partnerships: (a) adopt-a-school partnerships; (b) project-driven partnerships; and (c) reform-model partnerships. She presents the first two of these forms in positive terms, but clearly favors the reform-model partnership, which "seek changes that become embedded in the system and remain in place and supportive of structural reform over the long term."

Rigden then recommends five steps in developing a reform-model partnership, and lists specific actions that a business could take in addressing goals to increase student learning, extend the capacity of teachers, create school systems to encourage innovation, and develop effective assessment tools. She concludes with examples of human resources, material resources and advocacy that a business might provide as it becomes involved in fostering change in each of these goal areas.

What Business Can Do to Achieve Educational Change in a Community

Frank Newman

The role of business leaders in helping to change education is crucial. But knowing what to do, how to do it, and what not to do is essential. Business is needed as a force for change, a force that can join those state policy leaders and those educational leaders who are already out there trying to bring about a transformation of our schools.

The main task is asking the hard questions and insisting on needed changes. The best way to do this is to create a coalition of powerful business and community leaders willing to devote the time to learn about school reform and to press for action. Such coalitions have a second critical function beyond being a force for change—they help provide continuity for the transformation effort over time, as political and educational leaders change.

What sort of change is needed in the schools? Most important, there is a need to increase the abilities of school graduates dramati-

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Newman, F. (c. 1990). *What Business Can Do to Achieve Educational Change in a Community.* New York: Southwestern Bell Foundation. Reprinted with the permission of the publisher.

cally. This means more than memorizing additional facts; it requires, rather, understanding what those facts mean, learning to think clearly, learning to write an effective paper and a clearly reasoned letter. But it also means learning to solve problems, to take risks, to be creative, to be responsible, and to understand the nature of an international world.

For this transformation to take place both in how much and in what students learn, schools must change. Teachers must learn how to engage students in an active learning experience. Teachers and administrators must begin to put to use the vast array of information on new ways to teach and to run schools, information now largely ignored. Teachers must be more involved in reshaping how their schools operate. Schools must focus more on output measures, e.g., student learning, versus input measures such as the number of teachers and administrators or teacher pay. States and school systems must develop new policies that hold schools accountable for student learning.

Twelve Effective Steps to Achieve Change

What specifically can such a business/community coalition do? Keep in mind these things: that every system of schooling is different; that the process of change is ongoing; and that a continuing evolution is needed, not just a one-time change. With these things in mind, here is a list of steps that have proved effective:

- Build a coalition of business, community and political leaders.
- Help the state develop a vision of desired student outcomes and a vision of how a school system should operate.
- Encourage the development of new forms of assessment to measure what students really need to learn.
- Gain broad public and political support for continuing reform.
- Encourage flexibility so that schools can experiment.
- Urge the state to select a set of pilot schools to serve as models.

- Help the state develop a system of accountability with rewards and sanctions to ensure that schools focus on achieving the student outcomes desired.
- Develop other policy options that support and encourage schools to take risks and to adopt successful models that have worked elsewhere.
- Call for the restructuring of both the state department of education and school district administrations so that they set goals and support schools rather than depending primarily on regulation and control.
- Give every child a chance to learn by developing programs for early-childhood education, mentoring and parental involvement.
- Press for retraining of teachers and administrators to focus on real learning.
- Work with the universities to restructure teacher education so that new entrants to the teaching profession are well-prepared change agents.

The problem is not that our schools have failed; it is that society is changing outside the schools.

Problems We Face

There are three significant complications that make school transformation difficult.

The problem is dynamic, not static. The United States cannot cling to a golden view of education that has long since outlived its usefulness. Society is changing at a rapid rate. The problem is not that our schools have failed; it is that society is changing outside the schools. There is no evidence that the end of this rapid change is in sight. Even if a school system could be designed that is ideal for the 1990s, by the next decade it would be obsolete again.

In the current world, American schools compete with those in other countries. The question used to be whether Missouri schools were as good as Illinois schools. The issue now is whether they are as good at math as Korean schools and as good as British schools at teaching history. In other words, American schools are now competing in an international environment. While the United States is struggling to upgrade its schools, every other major country in the world is going through the same process.

So even if a state could create the ideal system of education today, it wouldn't be adequate tomorrow. What is needed is a dynamic system, a system that is self-examining and self-changing.

We have a diverse population, and it is getting more so. Often this is seen in racial terms; but there are other dimensions of diversity that tend to be overlooked, e.g., the diversity of families. Statistics say the easiest child to educate is one from a two-parent family in which both parents are educated, and in which they have a reasonable amount of resources, they value education, they believe the child is going to succeed and they are prepared to intervene in the child's life by encouraging homework, reading to the child and telling the child school is important.

More and more frequently, children grow up in a single-parent family, often with a parent who is poor and ill-educated, who may not value education, who may not have the links to life, who may not expect success, and who does not transmit an expectation of success to the child. Differences in families are powerful—far more powerful than questions of race.

Also, children learn in different ways; there is a diversity in learning styles. Some learn well only when they can do something physically and see the results. Others must have a very clear, pragmatic vision in front of them as to what the information is for. Some learn well in an abstract mode. These differences tend to be ignored by the current system of schooling. ***The current system of schooling assumes that the right way to learn is listening to someone talk. As it turns out, this is not the best learning mode for most children.***

The result is a system that expects that the child should adapt to the school, not the school to the child. As such, it has been as much a sorting system as an educating system. Students come in, march along, and at some point many fall out. Some stop paying attention in the third grade. Some drop out at the end of high school. Some drop out at the end of one year of college.

In the past, it all worked out because there was a match between how well educated people were and the needs of society. The resulting sorting seemed fair because everybody at least had a chance. The American dream was not that everyone would succeed, but that everyone would get a chance. Enough people have succeeded in American education so that it is viewed as the most egalitarian system in the world. Up until now, its successes and failures have been accepted.

Now this country must operate on a fundamentally different assumption—namely, that every child can learn. This is not yet a widely shared belief. Within inner cities, about half the teachers, parents and administrators do not believe that the average child can learn. That sounds like a terrible statement, but it's true. Many do not believe that the average student can learn at a high enough level, for example, to go on to college.

Yet there is overwhelming evidence that almost all children (save a small percentage who are permanently and intellectually damaged at birth) can learn.

If this nation is going to continue to be successful, it must assume that all children can learn. That assumption will require fundamental changes in how schools view their responsibilities.

Students need to learn more things, but also different things. The 1990s require different kinds of skills, not just more knowledge. Students need to know more mathematics, but they also need to know how to reason in mathematical terms. They need to know more geography, but they also need to understand different cultures and to master a second language.

Students need the ability to reason, to think in abstract terms, to be able to connect two thoughts, and to connect abstract thought to pragmatic tasks. They need the ability to be creative. Schools have

If this nation is going to continue to be successful, it must assume that all children can learn. That assumption will require fundamental changes in how schools view their responsibilities.

never asked students to learn to be creative before. Now this country must make its living by its wits, staying ahead by being at the cutting edge, not by raw productive power.

Students need to develop a sense of responsibility, including a sense of civic responsibility. They need to be empowered as participants in the learning process, not only because they will learn much more, but because they need training to become empowered adults.

So it is not just that the system has to become better at teaching knowledge. It must teach skills and values that have not previously been on the agenda.

So it is not just that the system has to become better at teaching knowledge. It must teach skills and values that have not previously been on the agenda. The system must teach those students who have in the past fallen through the cracks. Saying "well, we gave them a chance" is no longer good enough.

It is clear that, as difficult as all these things are, transformation of education can happen—must happen. It is being done in some states; it can be done everywhere.

What Does Not Work in Educational Change

Before turning to what works, it will help to be clear about what doesn't:

More money alone. Money is important, but money is not the most important issue. The reallocation of resources is central. The United States spends more money per student than any other country in the world by a significant margin. The issue is how the United States can spend the $200 billion it's spending on elementary and secondary education to produce better learning. Business funding is important as leverage to make change occur, but the worst thing would be to stand around and say, "We need massive infusions of money, or it won't work." Money isn't the most important issue.

Turning around a given school but not the school system. Education is like any other bureaucracy. Schools exist in a system. Unless the entire system is turned around, over time it will eat away at even the most skillfully reformed school. The "system" is everything from the school on up through the district and the state legislature.

In case after case, successful schools have given up and returned to mediocrity after years of confronting the system.

For example, there is a West Coast school in which a new principal came in to find students graduating from the sixth grade with an average of fourth-grade skills. The principal spent her first year talking with the teachers about change. They all agreed to come back on their own time two weeks early to put a new plan into effect. They devoted the first two hours of every day to the basics. They took all the specialists, the Title One specialist and the specialist for the handicapped, put them in the classroom, and had them continue to serve as specialists by coaching the other teachers in dealing with handicapped children.

The net effect of these and other changes was that after about two and a half or three years, almost every student was graduating at the sixth-grade level. They had gone from the bottom of the barrel in the school district to well above the middle.

And what happened? The same thing that happens all across the country: The school district began to chip away. Administrators began to show up and say, "Wait a minute, you're spending the first two hours on basics? The rule says you must spend 20 minutes on this subject and 20 minutes on that subject. I understand you have specialists for the handicapped in the classroom. Oh, it may work, but you lose that position if you do it that way." And on it went. Finally, after five years, the principal quit.

Tinkering at the margin. A little change won't do it. This is not a case in which if the schools were tuned up another 5 percent, everything would be all set. Society has changed, the world of work has changed, and schools have to change. The two battle cries of the status quo are: "We're already doing it" and "It won't work here." The answers are: "No, you're not" and "It will too."

A single change. There is no silver bullet. School choice is an interesting and useful concept. It works in a number of places. Done properly, it can work across the country. But choice alone, which is often put forward as a silver bullet, will not do it. What is needed is a fundamental change. Schools must evolve from a bureaucratic, top-down, hierarchical system. School choice, alternative forms of teacher certification, no pass/no play, or any other useful policy, by itself, won't do it.

School-based management alone. The state or the district cannot simply give power to the school unless it puts in place some system of accountability, some set of goals, and some set of incentives for reaching them. In other words, just saying that a school can manage its own affairs doesn't ensure it will be successful in getting students to learn more.

More and more narrow multiple-choice testing. What you test is what you get. Multiple-choice testing's primary virtue is in the tracking of students. It's not useful in a diagnostic sense. What is needed is diagnostic and more fundamental testing that measures the students' ability to use their minds well.

Failure to build community support. A failure to build community support is fatal. Unless the public presses for the same changes education reformers want, they won't occur. This means that those who want to change schools must be good at the public relations aspect of educational change as well. It also means avoiding a union-bashing approach. No one yet has accomplished any major school reform work without the unions being a party to it.

What Works in Educational Change?

Here are 12 things that research has shown work:

Most important by far: changing the school climate, the school mode, the school design—what today is called restructuring the schools. The difficulty in talking about restructuring schools is that it is a complex concept. By restructuring schools, education leaders mean starting to think differently about how children learn and how teachers teach. Children learn far more—and they learn the skills and values they need in this changing world—when schools stop lining them up in rows and lecturing at them; when the process of learning is shared by teacher and student and by groups of students; when teachers know students personally; and when thinking is valued. When these elements are present, students will want to learn.

But this means the principal must be an academic leader, not solely an administrator. In fact, most principals occupy their lives with administrative duties. But the principal needs to be the person visibly in charge of designing, encouraging and developing how the school is going to look as a learning institution. Therefore, the principal must empower the teachers.

But to change the way students learn, schools must change. Teachers must be leaders. They must empower students. Students must be workers in the process of learning and do much of the thinking, discovering and researching. The job of the teacher is to coach. This takes a lot of self-confidence on the part of teachers.

But to change the way students learn, schools must change. Teachers must be leaders. They must empower students. Students must be workers in the process of learning and do much of the thinking, discovering and researching.

The basic goal is to empower students. Teachers and principals need to know students, and to know them personally. This won't occur in classrooms in which teachers see 150 students a day. The size of schools and classrooms must be reduced. The total number of students that the teacher interacts with has to be reduced.

Creating this sort of climate is the first thing that works. New approaches to policy can help create the climate.

Create a serious coalition. No priesthood ever reforms itself. Educators aren't the only ones who can't reform themselves; neither can the medical profession nor the legal profession. The community needs a coalition that is prepared to spend the next 10 years working on education problems. This coalition should include a number of different groups.

It must include business leaders. Why? Because the business community has the biggest single stake, other than the state government, in the effectiveness of the education system. The business community has awakened to the fact that it can't proceed without a well-educated work force. Business leaders have the clout to command attention and the staff to make things work.
It must include state government. Why? Because the state govern-

ment makes the rules by which schools and school systems operate and puts up the most money.

It must include the unions. Why? Because the unions, unless they're party to the plan, are going to be fighting it every inch of the way. Where they are party to it, they have been constructive partners and have ownership.

It must include parents and community leaders. Why? Because parents, particularly the most active parents, will continue to preserve the status quo unless they understand why change is needed.

What is needed is a coherent group with sufficient funding, focused knowledge and leadership to take on these issues in a courteous but determined way. This includes asking "What are our goals? How do we know if we're meeting our goals? And what are you, in the educational system, going to do to meet these goals?"

Set high expectations. Far too little is expected of American students. Until the expectations are changed, schools will get what they have now. One example is former Governor Richard Riley's leadership in South Carolina. He created regional meetings across the state and discussed and debated what the expectations should be. Once there was agreement about a set of expectations for every graduate, the state developed a program to measure performance against those expectations.

People work best when there are clear-cut goals. If the goals say every child should be able to do certain things, then there should be a way of intervening when it isn't happening. For example, there may be agreement that every child should be at grade level. Once the goal is set, it enables the community to come back to the schools and the district to ask, "OK, how are we going to achieve this?"

Today a lot of students are not performing at grade level. In a very large city, it is not uncommon for 50 percent of the student body not to graduate. What's the response? "Well, it's a big city. What do you expect?" What is needed are schools that say, "Here are the expectations. Every student is going to graduate. Students are all going to be at grade level. Now, how are we going to do it?"

Test for higher-order skills. The process of assessing student performance must move away from simplistic testing toward testing higher-order skills. It can be done; it's already being done in many places.

Retrain both teachers and principals. Change is not something that's going to happen without a lot of training. There are already examples; some school districts and even states are doing it now. Probably the most sophisticated is the school system in Pittsburgh. That city has spent eight years training and retraining its teachers and principals. And when you ask the superintendent, Dick Wallace, how far along they are, he answers, "About half way," and he adds, they may never get all the way there because it is a never-ending task.

Change is not something that's going to happen without a lot of training.

But it's also essential to get enough teachers and administrators started in their training so that there will be a sufficient mass of people willing to try new ideas in order to achieve major restructuring.

Support risk taking. One of the most important things the community can do is to support principals and superintendents who are prepared to take risks. There is not a lot of support for risk taking in the educational community now. Remember, often two of the most conservative forces are parents and school boards. The school board often implies to the superintendent and principal that the most important thing is to avoid having problems. Don't let the school buses run late. Don't have a teacher say something harsh to a sensitive child. In other words, don't make waves. And yet, because of the need to reshape the way schools function, it's time for major risk taking. Who is going to support that innovative superintendent, principal or teacher?

Press for policy changes. The use of small competitive grants is one of the most effective ways of doing this. In Colorado, for example, Governor Romer has set up "Creativity Schools" with small grants ranging from $5,000 to $25,000. Any school or school district can apply. The committee says, "This is what we'd like to accomplish. We're not going to tell you how to do it, but this is what we'd like to accomplish. The best 25 proposals will get funded."

Self-esteem is important, and the single fastest way to develop self-esteem is to mentor a child at risk.

Last year, 325 schools submitted proposals. This year, the estimate is that there will be about 500. Many of the proposals that didn't get funded were implemented anyway, because the grant process itself became a vehicle for empowering innovative principals, teachers and boards who wanted to do something. The tradition in education is that if someone tells the schools they have to change, they draw their swords. If schools know $25,000 in grants is available, but that obtaining some of it would require doing something innovative or changing the school, they say, "No kidding? Let's go!" Small grants are a vehicle for achieving change.

Early-childhood education. There's no way to provide early-childhood education without added expense, but it does work. The two big issues in early-childhood education are the quality of the program (including the quality of the teachers) and its availability to those who need it most. This country is moving inexorably toward early-childhood education—more than 40 percent of the 3- and 4-year-olds are now in preschool. Currently, most early-childhood education in this country is being provided for students who need it the least because their families can afford it.

Mentoring. Self-esteem is important, and the single fastest way to develop self-esteem is to mentor a child at risk. It would be easy for this country to find volunteers and mentor every child at risk. Mentoring helps not only the child being mentored and the mentor, but also the school. While the school is struggling to turn itself around, to restructure itself, we can make life easier for the school by giving it more interested and self-confident students to work with.

The evidence on mentoring is overwhelming; it works. It doesn't take a lot of money; it takes trained mentors, matching them to the students and supervising them.

Involve parents. The more bureaucratic a school, the less likely it is to involve parents in a meaningful way. But parents are a powerful factor in a child's learning—for good or ill. Many states, districts and individual schools have developed effective programs of reaching out to draw parents into the schooling process. Experience has shown that when the least involved, least well-educated parent or parents are drawn into the teaching/learning process, the child gains.

Press for restructuring and de-layering the state department of education. Most businesses have been forced to cut the layers of supervision in the central operations and focus attention on support of the operating units. Education departments need to do the same to become better and more flexible sources of support for schools and less sources of control.

Inservice and training dollars should go toward learning how to restructure schools. For example, there is money in most school budgets for retraining, but not much of it goes to retraining of the kind needed to help in restructuring the schools. These are reallocation problems. Reallocation problems are stubborn and difficult. That is why there is a need for a coalition of interested citizens who are prepared to become knowledgeable about system change, to ask tough questions and to make change happen.

Five principles for restructuring

- All policy should start with the question: "How does this improve student learning?"

- The goal of restructuring is to improve learning for all students. Both equity and high standards must be achieved.

- Teachers must actively engage students, promoting higher-order thinking, not just basic skills. Passively sitting in a classroom listening to a lecture will not prepare students for today's world.

- The entire system—from schoolhouse to statehouse—must change.
- Restructuring requires coherent policies all across the system, including those for curriculum, assessment, professional development and parental involvement.

Both the individual schools and the school system as a whole must be held accountable for performance, as must superintendents, principals and teachers.

Summary

What is needed is a system in which policy encourages school transformation. Policy should not only give more flexibility to the school, but it should also create a set of expectations, and a set of accountability measures, and should encourage the retraining of people. Both the individual schools and the school system as a whole must be held accountable for performance, as must superintendents, principals and teachers.

Almost nothing that has been mentioned, except early-childhood education, requires major amounts of money. Retraining does take money, but it doesn't take massive amounts, and schools already spend money on inservice programs and training. The plain fact is that more money won't make people change. In fact, it's often the absence of money that makes people change.

What educators need to say is: "Here is how we are going to change these schools. Now, at these critical junctures, we need some added funding. But first let us show you how we are going to change these things." If education does that, it will get the money it needs. This is a hard task for American education, but important and achievable.

Business/School Partnerships: A Path to Effective School Restructuring

Diana W. Rigden

American business made elementary and secondary education its business in the 1980s. As schools and districts began to examine common practices and make necessary changes to promote good teaching and learning, companies joined schools as partners in the reform process, offering critical support and encouragement.

The direction a partnership takes, the methods it uses to promote school change, and its success with different strategies are all strongly influenced by local needs and policies. What works well in a medium-sized community may not have the same success within a large urban system. Overall reform principles, however, remain consistent. Below are some general guidelines for companies interested in support of school-based restructuring efforts.

The Role of Partnerships in Supporting School Reform

Business/school partnerships encompass a variety of different relationships, but it is possible to characterize most of them as

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The ideas and information presented are excerpted from a recent report, *Business/ School Partnerships: A Path to Effective School Restructuring*, available from the Council for Aid to Education. Reprinted with the permission of the publisher.

belonging to one of three primary configurations: adopt-a-school model, project-driven model, and reform model. These are not altogether tidy distinctions. Partnerships change over time, acquiring greater complexity as partners develop a commitment to undertake long-term reforms or shift their priorities to meet the needs and interests of changing players.

Partnerships change over time, acquiring greater complexity as partners develop a commitment to undertake long-term reforms or shift their priorities to meet the needs and interests of changing players.

The Adopt-a-School Partnership

What it is. Adopt-a-school partnerships are usually created between a single company and a single school to provide resources and volunteers to support school activities.

What it can accomplish. Especially within the context of increased government cutbacks in education spending, the adopt-a-school partnership offers schools much-needed resources and important additional adult interaction for students. And it is often through an adopt-a-school relationship that school and business people can develop the sense of trust and confidence in each other that lays the foundation for other types of partnerships.

The Project-Driven Partnership

What it is. Project-driven partnerships are formed to address specific academic or social problems. Project-driven partnerships are often developed through close interaction between school and company employees; they may import successful programs created and tested elsewhere; they may serve as a vehicle to oversee academic programs run by universities for the schools.

What it can accomplish. Project-driven partnerships are excellent vehicles for enhancing course work and extending learning opportunities for all students involved in the project. They can change attitudes and practices in the classroom, school, and school system and can significantly improve teaching and learning.

The Reform Model Partnership

What it is. Often developing out of relationships established through earlier partnerships, the reform model partnership focuses on system change: finding ways to change the learning and teaching environment by expanding the responsibilities and roles of students, extending teaching practices and empowering teachers, changing the organizational and management structure within schools and districts, and developing proficiency model assessment tools.

What it can accomplish. Reform model partnerships seek changes that become embedded in the system and remain in place and supportive of structural reform over the long term.

Five Steps to Developing Reform Model Partnership

The five steps to developing a partnership aimed at helping schools and school systems change are different in focus and application from those steps taken to form traditional partnerships. The mission, goals, and strategies of reform model partnerships are centered on the task of challenging current school practices (teaching, learning, and management) and developing school-based system change.

- **Agree on Specific Goals.** Partners in a reform model partnership must identify partnership outcomes that directly relate to restructuring outcomes.

- **Develop Strategies for Involvement.** In reform model partnerships these strategies for involvement must not only be directed at helping the district make the changes necessary to achieve restructuring goals but also at incorporating those changes into the structure of the school and district.

- **Identify Costs in Resources and Personnel.** All partners must understand the additional costs in resources and personnel that the restructuring effort will require.

- **Monitor, Assess, and Evaluate Outcomes.** The partners need to establish a system to monitor, assess, and evaluate how well partnership activities help the school and school system reach restructuring goals.

- **Manage the Partner Relationship.** The partner relationship must be managed so that it effectively fulfills its responsibility as a catalyst to school restructuring.

How Reform Model Partnerships Can Address Restructuring Goals

To increase student learning, companies can…

- provide funds to experiment with flexible staffing and schedules;
- use coaching techniques to mentor students;
- help students learn their role as "workers";
- develop workshops for parents; and
- help connect students to appropriate community agencies.

To extend the capacity of teachers, companies can…

- bring in experts to expand teachers' skills;
- extend teacher internships through "sharing" workshops; and
- develop training programs for teachers and volunteers [for] teaching techniques, mentoring, and tutoring.

To create school systems to encourage innovation, companies can…

- help educators assess needs, set goals, and develop strategic plans;
- help districts hire qualified directors for restructuring process;
- bring in experts to expand managerial skills;
- bring in consultants to provide expertise to teachers and staff; and
- help schools better inform the community of reform efforts.

To develop effective assessment tools, companies can…

- help schools generate, manage, and use assessment information;
- encourage districts to identify and develop measurable goals;
- help teachers create performance-based assessment strategies; and
- work with administrators to institute an interactive evaluation process.

Strategies for Involvement in Reform Model Partnerships

Given the nature of school-based system reform, companies forming a partnership with a restructuring school or district must work closely with teachers and staff to coordinate their human and material resources and advocacy roles to restructuring goals.

Goal 1: To Increase Student Learning

School Reform Outcomes	Possible Company Involvement		
	Human Resources	Material Resources	Advocacy
1. Master course work -reading -writing -mathematics	Provide training in coaching skills for tutors, mentors, and employee volunteers.	Link gifts of lab equipment, books, computer technology, and software to teacher training. Provide grants for curricular programs directed toward restructuring goals.	Advocate national standards.
2. Develop problem-solving and critical thinking skills	Provide scientists and lecturers trained to help students discover solutions to real-world problems.	Design summer job experiences and internships to help students develop higher-order skills.	Advocate changes to student assessment programs.
3. Increase ability and confidence to explore new ideas	Work with mentors and role models to encourage students in risk-taking exercises that develop self-confidence.	Help schools create work/study programs that challenge students to use skills and knowledge from classroom.	Advocate links between social services and the schools.

Goal 2: To Extend the Capacity of Teachers

School Reform Outcomes	Possible Company Involvement		
	Human Resources	Material Resources	Advocacy
1. Extend knowledge of subject and applications	Direct or sponsor subject-area workshops. Provide corporate resource people to work with teachers on special projects.	Provide funds for released time so teachers can attend classes, workshops, and seminars in subject; and provide summer experiences that extend both academic and workplace skills.	Advocate changes in teacher certification.
2. Learn and use different teaching strategies	Retain experienced educators to run workshops on a variety of teaching techniques.	Fund site visits to other schools; and provide teacher training workshops on effectively using technology in the classroom.	Advocate different ways to assess good teaching.
3. Have time, resources, and support	Run team-building workshops in the schools.	Help schools establish, use, and maintain computer networks for teachers; and provide grants and awards to support and recognize effective teaching.	Advocate changes in scheduling and class size.

Goal 3: To Create School Systems That Encourage Innovation

School Reform Outcomes	Possible Company Involvement		
	Human Resources	Material Resources	Advocacy
1. Develop leadership skills for goal-setting and creating opportunities for change	Provide executives-on-loan or consultants for strategic planning.	Provide training materials for team management strategies.	Help schools find ways to build community support for educational reform.
2. Redesign management structure	Run and/or support management training workshops on team-building and shared decision making. Train members of local school councils on financial statements, consensus building, and management techniques.	Provide schools with equipment and training to establish effective data processing procedures and reports.	Serve on school boards or local school councils. Advocate assessment and replication of model schools.
3. Change education policy to support innovation	Work on local, state, and national task forces and coalitions promoting school-based restructuring.	Provide grants for research on effective strategies for restructuring schools and school systems.	Advocate changes to rules and regulations hindering effective school management, teaching, and learning; advocate attention to the impact of social problems on education.

Goal 4: To Develop Effective Assessment Tools

School Reform Outcomes	Possible Company Involvement		
	Human Resources	Material Resources	Advocacy
1. Set criteria for skills and knowledge	Help schools and districts specify criteria for teaching high-level academic skills. Serve as consultants for helping schools collect, assess, and evaluate student records and research data.	Provide grants for research on effective assessment strategies.	Advocate a balanced set of expectations in broad education goals and workplace skills.
2. Develop tools to measure mastery and proficiency	Provide qualified experts to run training workshops on proficiency assessment.	Provide materials, equipment, and training to teachers interested in portfolio assessment.	Support the ongoing development of appropriate tests and proficiency measures.
3. Create evaluation standards and scoring rubrics	Provide statistical consultants to work with schools and districts to establish outcome, reliability, and validity measures.	Provide funds to help teachers and schools experiment with new assessment strategies.	Advocate the ongoing development and use of better assessment tools.

Comments on Business–School Collaboration

Although this volume focuses on university–school collaboration, we also wish to acknowledge—and learn from—business–school collaboration. With this goal in mind, we have included the preceding papers by Newman and Rigden.

Not very long ago, a collaboration between a business and a school amounted to the business occasionally donating money or equipment in the interest of enhancing the school's learning environment. Today, while businesses still make such donations—and schools still appreciate them—business–school relationships involve more direct participation by the business partner in the school's decision-making process. Business leaders understandably want some assurance the human or material resources they provide will result in real improvements. Moreover, as Newman and Rigden indicate, business leaders want and expect fundamental, structural improvements in the ways that schools respond to the changing conditions of education. Both writers describe "advocacy" as an important strategy for effecting change; Newman addresses advocacy of policy changes at the state level, while Rigden emphasizes advocacy at the level of the individual school or school district.

Today... business–school relationships involve more direct participation by the business partner in the school's decision-making process.

Curiously, these knowledgeable authors give little attention to the role of individuals from the business community in fostering and supporting change in the schools. The "action steps" they recommend (e.g., Rigden's "agree on specific goals" and Newman's "build a coalition of business, community and political leaders") require hands-on, dedicated leadership, often for prolonged periods. This leadership must come from individuals who have both an abiding concern for the quality of education and the generous support of their employers.

These authors also give little attention to the potential role of universities in fostering and supporting change in the schools. Newman's "twelve steps" include working with universities to prepare new teachers to serve as change agents, and Rigden doesn't mention universities at all. In their writings, we find little enthusiasm for the emergence of three-way collaborations, in which businesses, schools, and universities work together in pursuit of a consensus on goals for school improvement.

Three-way partnerships deserve exploration for two basic reasons. First, each of these prospective collaborators can contribute perspectives and resources that the other cannot. Businesses, for example, can bring management expertise, opportunities to expose teachers and students to real-world requirements for academic learning, and all-important support for policy changes. Universities can offer subject matter expertise, opportunities for teachers and students to see how elementary and secondary education must prepare students for postsecondary education and academic careers, and (again) support for policy changes. Finally, school administrators and teachers can provide expertise on students' learning needs, the development of curriculum and instruction, the conditions of learning that exist in the classroom, the school, the home, and the community, and a long list of other relevant factors.

The second reason for fostering three-way collaborations is that strategies and initiatives to strengthen education should be unified and coherent. Educational leaders have concluded that the locus of change should be the school site, rather than, for example, the individual classroom, the district, the state, or the nation. Nevertheless, a site-level team of teachers and administrators can find themselves pulled (or pushed) in several directions by university academicians, business/community leaders, parents, school district administrators, the state department of education, and national organizations that propose standards for curriculum and staff development, or other aspects of the site's program.

The teacher who wishes to bring about a significant change in his or her classroom must practice "selective inattention" to screen out a flurry of well-intentioned and often completely valid recommendations and adopt a change strategy that makes sense in terms of the teacher's knowledge and interests, the students' learning needs, and the resource constraints of the teacher's school and classroom.

We could point to several examples of three-way collaborations, most of which—to be generous—should be recognized as "pioneers." We also could point to the guidelines of a few funding agencies, including the California Academic Partnership Program, that encourage or require applicants for school improvement grants to include three-way collaborations. In short, we are already in the early stages of learning how we might develop such three-way collaborations and make them effective.

Even though we might acknowledge the rationality of three-way collaborations, we should recognize that their development and implementation is not an easy matter. They multiply all the difficulties associated with either university–school or business–school collaborations simply because they involve forging productive relationships among three parties, rather than between "just" two.

Success in building these relationships, we believe, begins with agreement on goals and the establishment of a leadership team whose members understand their own strengths and limitations, and respect the strengths and limitations of their collaborators.

Teacher Education

Numerous studies and opinions have addressed the complex challenges of teacher education. In most cases, those who would improve teacher education focus on the school or college of education, as the institutional centers of these activities. Here, in keeping with our focus on collaboration, we address the participation of prospective, nontraditional participants in teacher education: college and university leaders, disciplinary scholars, and business leaders. This section includes three papers, one on each of these groups of nontraditional participants.

We begin with Phyllis Edmundson's summary of John Goodlad's "call to action" to "advance the agenda for teacher education in a democracy," which is presented more fully in his book, *Teachers for Our Nation's Schools*. Drawing heavily on Goodlad's book, Edmundson cites five conclusions on the current state of teacher education, and presents provocative questions about institutional commitment, curriculum, supportive structures, students, and plans of action. She follows these questions with recommendations for action by individuals at each level of university governance, and the names of resource persons in six national groups that support the work of improving the education of educators.

Diana W. Rigden, in another guide to John Goodlad's book, *Teachers for Our Nation's Schools*, lists six "essential characteristics of an ideal teacher education program," then recommends fifteen actions for business leaders to take in helping to achieve those essential characteristics. She organizes these recommended actions under the following headings: "Help design more effective general education curricula"; "Make sure teachers know a variety of ways to teach"; "Create a model teacher education program"; "Recruit top-quality students"; and "Link teacher education with school reform." Rigden provides the names of four resource persons (also cited by Edmundson) that could provide more information on teacher education reform and how business leaders can assist.

The final paper, by Mary Montgomery Lindquist, John Harvey, and Christian Hirsch, brings the issue of participation to the mathematics faculty of universities. Using as their guides the National Council of Teachers of Mathematics' *Curriculum and Evaluation Standards for School Mathematics* and *Professional Standards for Teaching Mathematics*, the authors observe that "undergraduate mathematics is the gatekeeper to the fundamental reform of school mathematics...." They call upon university mathematics faculty to make full use of calculators and computers in their calculus and linear algebra courses "to support the shifts in content emphasis proposed for secondary school mathematics." They also call upon these faculty members to broaden the content of mathematics programs to provide opportunities for prospective teachers to "confront ideas in meaningful contexts in which they are actively involved in doing mathematics...."

What College and University Leaders Can Do to Help Change Teacher Education

Phyllis J. Edmundson

Ideally, America's elementary and secondary schools should assure that all of the nation's young people will learn to think clearly and critically, live honorably and productively, and function effectively in a social and political democracy. In reality, the schools fall short of the mark.

Many people are raising substantial questions about America's schools, and reform is much on their minds and in the news. But they must realize that the schools will not change until teacher preparation programs change.

Long-term school reform depends on having all teachers in a school working together, constantly reviewing and improving the whole. Because of the way they are prepared, most teachers lack systematic training in consensus building or experience in working as a team with administrators and parents to improve the overall school.

Reprinted with the permission of the publisher from Edmundson, P. J. (c 1991). ***What College and University Leaders Can Do to Help Change Teacher Education.*** Washington, DC: American Association of Colleges for Teacher Education.

Preparation programs focus on work in individual classrooms, not on school reform. Yet, school reform is in trouble unless teachers learn to see beyond the limited horizon of the classroom.

If schools are to achieve their promise as institutions of a democracy, they must be staffed by teachers who are well-educated, who clearly understand their moral and ethical obligations as teachers in a democratic society, who have a solid grounding in the art and science of teaching, and who take seriously their responsibilities as stewards of the schools. If schools are to have such teachers, then teacher education must undergo serious renewal in tandem with the reform of public schools.

The nation is at a critical juncture, with a rare opportunity at hand. During this decade, many teachers will retire or switch careers. Schools will hire two million new teachers to fill these vacancies. How they are selected, prepared, and inducted into teaching will be crucial to the success of school reform. Likewise, many professors in both liberal arts and education will retire. Colleges and universities also can further school reform by appointing faculty who will work toward teacher education renewal.

Reforming schools and reforming teacher education must proceed simultaneously. One cannot have good schools without good teachers. Conversely, teachers must learn how to teach in good schools. At present, neither the schools nor the teacher education programs are good enough.

Teachers for Our Nation's Schools

A blueprint for the simultaneous renewal of schools and the education of educators is put forth in John I. Goodlad's latest book, *Teachers for Our Nation's Schools* (1990). Using surveys, interviews, and visits to representative colleges and universities with teacher education programs, Goodlad and his colleagues have gathered a formidable amount of data on the teacher education enterprise. *Teachers for Our Nation's Schools* presents Goodlad's conclusions and summarizes the richness and depth of this five-year study, the largest ever on the subject.

Goodlad raises serious concerns about

- the nation's changing demographic and economic conditions that are creating new expectations for teachers and schools in a democracy,
- the inadequate way teachers are being prepared,
- the neglect teacher education suffers, and
- the state's tendency to over-regulate this professional preparation program.

As the following conclusions from the report illustrate, a tremendous amount of commitment, energy, creativity, and support will be required to revitalize teacher education.

Conclusion: Teachers do not know enough to teach about the responsibilities of living in a democracy.

The schools have a moral imperative to enculture the young into a democracy and to instill in them the disciplined modes of thought required for effective, satisfying participation in human affairs, Goodlad writes. He argues that it is fundamental for all students to learn what democracy is, how it works, and what their responsibilities are for full participation.

Teacher education programs, however, pay scant attention to helping prospective teachers develop an understanding of democracy—in the broadest sense of the word—and what it means to teach students their moral and intellectual responsibilities for living in a democracy. Nor do teacher education programs devote systematic attention to the means by which all students can be provided the intellectual tools for participating broadly in the human conversation.

Conclusion: Colleges and universities provide little sustained commitment to teacher education.

College presidents rarely consider teacher education a priority for themselves or their institutions, Goodlad reports. Many teacher education programs are tolerated merely because of economic or political expediency. These programs often have no organizational identity, no faculty with decision-making authority, and no constancy of budget and personnel. Faculty are penalized for involvement in teacher education by the current reward structure.

College and university leaders must embrace their social responsibility and strive to fully fund and support, actively promote, and vigorously advance their teacher education programs, according to Goodlad, or they must quit the business of preparing teachers. The president must establish a clearly identifiable group of academic and clinical faculty, drawn from the college and from elementary and secondary schools, and give this group the authority and responsibility for the teacher education program and its students.

Teachers should be among the best-educated members of society.

Conclusion: The undergraduate curriculum is inadequate for prospective teachers.

Teachers should be among the best-educated members of society. In reality, their general education consists of disconnected courses in arts and sciences. (Of note, these are the same courses that all other students take and that have been heavily criticized as inadequate in recent years.) These courses are followed by more disconnected courses in an academic specialization, methods courses for teaching, and field work and student teaching in local schools. Typically, these courses bear little relation with each other or with what has preceded or will follow.

New curriculum. Goodlad recommends a new curriculum for prospective teachers to include

- a pre-education sequence, much like pre-med for doctors, giving students a solid, coherent academic foundation, a sophisticated understanding of democracy, and an introduction to the art and science of teaching what they are learning;
- a professional education sequence for the study of learning, teaching, and schooling; and
- postgraduate sequence of well-supervised practice in clinical schools where ongoing assessment and renewal are standard practices.

The curriculum must be sequenced thoughtfully, with elements deliberately integrated to enable students to see the relationships across disciplines and between academics and teaching. The curriculum also must address how teachers, working with colleagues, administrators, parents, and community leaders, can continually renew their schools.

Clinical schools. Goodlad believes a wide variety of laboratory settings and exemplary schools must be available to teacher education students for observation, hands-on experiences, internships, and residencies. Clinical arrangements demand close collaboration between the schools and the university, and clearly delineated connections between class work and field work. For a school to qualify as a clinical site, its teachers and administrators must demonstrate their willingness to engage in constant, critical review and renewal of the school's structure and performance. The number of students admitted as a cohort to the teacher education program must not exceed the number of available positions in clinical schools.

Conclusion: Socialization of new teachers tends to reinforce the status quo.

During student teaching and during their first few years of work, new teachers may be charged with idealism and committed to making improvements, but they are likely to have little impact. New teachers face the tyranny of the status quo: "We've always done it this way," or "Welcome to the real world," or "Forget all that nonsense they taught you in ed school." The message is to fit in. Discouraged and disillusioned, many teachers quit; half leave the profession within five years. Of those who remain, many become isolated, trying to do the best they can in their individual classrooms.

Those who would make mentoring with experienced teachers the basis of professional preparation for beginning teachers are, in effect, supporting the status quo.

Conclusion: Because of shortages, some states allow teachers to become certified through questionable shortcut programs.

By linking school reform with reform of the education of educators, the chances are substantially increased for lasting improvements in schooling.

To meet shortages, state officials are turning to shortcut preparation programs because they are cheap and quick, but these programs have serious disadvantages. The novices prepared in shortcut programs are the greenest of greenhorns with respect to teaching. Their baccalaureate coursework, often completed many years ago, was just as fragmented as that of teacher education graduates, and the former have even less knowledge of how to teach, of teaching in a democracy, and of working collaboratively to improve the schools. In addition, their student teaching has occurred in the very schools that everyone has condemned as ineffective.

Goodlad insists that state certification policies must strongly support teacher education programs without unwarranted intrusions. Programs "must be free from curricular specifications by licensing agencies and restrained only by enlightened, professionally driven requirements for accreditation," he writes. In addition, programs "must be protected from the vagaries of supply and demand by state policies that allow neither backdoor 'emergency' programs nor temporary teaching licenses."

The Task Ahead

Despite the achievements of the school reform movement, schooling in America is still in serious trouble. Goodlad's recommendations in *Teachers for Our Nation's Schools* offer hope. By linking school reform with reform of the education of educators, the chances are substantially increased for lasting improvements in schooling.

Creating the kinds of schools the nation needs and educating the kinds of teachers those schools need mean a tremendous amount of work during the next two decades. The successful simultaneous reconstruction of teacher education and the schools will require diligence, resources, and patience. Of greatest importance will be the ability and willingness to think clearly and to stay the course. Faced with a tough and sometimes politically risky job, some will be tempted to look for easy remedies, quick fixes that involve less risk, less time, and fewer resources. But to fulfill the promise of *Teachers for Our Nation's Schools*, all concerned must avoid the easy way out.

Leaders in schools, colleges and universities, states, and businesses are encouraged to join Goodlad's and other educators' efforts to advance the agenda for teacher education in a democracy. This booklet provides a brief overview of the call-to-action.

What College and University Leaders Can Do to Help

Substantive change in the education of educators requires institutional leadership and commitment from those in higher education, as well as cooperation from those in the public schools. The forms of change will vary to fit each institution's culture, but the broad outlines of the agenda for change apply to all.

The following sections present a series of questions to stimulate the inquiry needed for a foundation for the change process. To have lasting and pervasive change, the whole institution must be actively involved. This includes the governing board, the president and academic vice president or provost, the arts and sciences dean, the education dean, and the faculty. A short list of resources concludes this guide to identify groups already giving serious attention to changes in teacher education.

Questions to Stimulate Action

The process of changing teacher education must begin with college and university leaders giving serious thought to basic questions about institutional commitment, curriculum, supportive structures, students, and plans for action. To garner the broadest support for change, leaders are advised to engage the entire university community in conversations about these questions.

Institutional Commitment

- What are the responsibilities of teachers in a democracy?
- Is this institution willing and able to commit the resources of time, money, status, and rewards required to prepare teachers so they are able to assume the responsibilities of teaching in a democracy? If the answer is no, steps should be initiated to eliminate teacher education from the university.
- What beliefs and values about teaching underlie and direct decisions about the programs to prepare teachers?

Curriculum

- What experiences would best prepare teachers to assume their responsibilities and conduct themselves successfully?
- How can faculty integrate subject matter and pedagogy throughout students' experiences?
- What are the crucial issues in education and how can students come to understand them?
- How can faculty ensure that the programs to prepare teachers provide positive models of effective learning conditions?
- What are the connections between theory and practice and how can the curriculum be strengthened to help students make those connections in their learning and teaching?
- How can the curriculum be restructured to help future teachers understand and accept their moral obligations as teachers, especially to provide quality education to all young people?
- How can the curriculum be structured to help prospective teachers understand their responsibilities for contributing to the ongoing renewal of the schools where they work?

Supportive Structures

- What kind of organizational structure within the institution will best support the education of educators as a central mission, and ensure that a group of faculty assumes responsibility for providing quality programs for all prospective teachers?

Students

- How many students can the institution accommodate in ways that allow it to
  —provide individual attention from the beginning of their preparation to teach,
  —thoughtfully evaluate them before admission to teacher education on all dimensions necessary for teaching,
  —monitor their progress and provide assistance, and
  —provide consistently high-quality clinical experiences?
- How can this institution seek out students from diverse backgrounds and help them overcome such barriers as inadequate basic skills or lack of financial resources so that they can successfully complete teacher education programs?
- How can this institution foster the development of cohort groups of prospective teachers who learn to collaborate and support one another?

Plans for Action

- What action steps are required to move teacher education programs to where they must be to meet their moral responsibilities in the preparation of educators?
- What resources will be required ? What are currently available ? How can these be used more effectively? What other sources should be explored? How can these sources be tapped?
- What obstacles must be overcome or their influences lessened?
- What enablers must be present to assist in the necessary changes? How can they be enhanced?

Taking Action

Thought without action means little. Only as reflection prompts thoughtful restructuring of teacher education programs can inquiry produce improvements. Such action will require participation by various leaders throughout the institution.

Only as reflection prompts thoughtful restructuring of teacher education programs can inquiry produce improvements.

Governing Board. Because of its policy-making role in a college or university, the governing board has important responsibilities in the renewal of teacher education. To support changes in teacher education, the governing board must establish that quality teacher education is a priority for the institution. [The governing board must…]

- require the president to demonstrate an understanding of the importance and complexity of the education of educators and to commit to its central role in the life of the institution.
- hold the institution accountable for providing consistently high-quality programs for the education of educators. If the institution is unable or unwilling to provide such programs, be willing to terminate those programs that do not meet the standards set by the profession.

President and Academic Vice President or Provost. An institution's academic leadership is vital to the success of any effort to renew the education of educators. These leaders must…

- provide vigorous public support for the education of educators in their institution, and clearly and consistently communicate that this endeavor is central to the institution's mission.

- make the education of educators a campuswide responsibility by emphasizing its importance and rewarding all who actively participate in developing and implementing high-quality programs.
- establish within the institution an organizational unit that has responsibility and authority over all aspects of preparing teachers, including identity and mission of the unit, budget allocations, faculty selection and development, student recruitment and selection, curriculum, and faculty evaluation and reward structure.
- allocate resources equitably to ensure that the unit maintains parity with other programs in the institution.
- maintain a commitment to do only what can be done well with the resources available.
- implement a faculty reward structure that recognizes and provides incentives for active participation in the education of educators and for research centered on pedagogical issues.
- provide resources to support the renewal of teacher education, such as faculty time for planning, funding for additional positions, and reallocation of funds.
- provide constant, predictable support as faculty work through the difficult process of developing high-quality programs for educating educators.

Dean of Arts and Sciences. Teacher preparation begins when students first enter the college or university and begin their academic studies. These studies are crucially important in the development of competent teachers. Teacher education is a campuswide responsibility, and the college of arts and sciences must have close ties to and involvement in the education of educators. As the leader of the arts and sciences faculty, the dean will be required to…

- recognize the importance and complexity of teacher education.
- accept responsibility for the college of arts and sciences to participate actively in the preparation of educators.
- commit to collaboration with the education unit in the enterprise of preparing educators.
- allocate the necessary resources for teacher education activities in the college of arts and sciences, such as time for faculty and administrators to serve on inter-college committees; joint

faculty appointments with the school, college, or department of education; and time for arts and sciences faculty to teach pedagogical courses.

- recruit faculty with expertise in pedagogy for joint appointments or assignments to the education unit.
- support faculty research into pedagogical content knowledge and related areas.
- establish incentives and rewards for faculty who contribute to the education of educators.
- improve and maintain the quality of general education courses and give attention to curricular reviews that ensure appropriate content for prospective teachers.
- require excellence in teaching from arts and sciences faculty.

Dean of Education. The primary responsibility for providing leadership in rethinking and restructuring teacher education resides in the school, college, or department of education (SCDE). As head of the unit, the dean has a pivotal role and will be required to

Provide leadership by

- identifying needed changes and encouraging development of a vision to guide teacher education programs.
- communicating clearly within the university and to the larger community the centrality of teacher education to the mission of the college or university and to the SCDE.
- obtaining necessary resources to support planning and implementing substantive changes in teacher education program structure and curricula.
- ensuring constancy of resources and continuity of personnel for teacher education programs.
- supporting limitations on enrollment on the basis of the teacher education unit's capacity to provide high-quality field experiences and thoughtful, deliberative seminars.
- expecting and promoting ongoing renewal of teacher education.
- committing to a long-term, substantive change process.
- supporting the development of an organizational unit that has as its central mission the preparation of educators. The SCDE would be a major stakeholder in this unit whether it is housed within the SCDE or elsewhere.

- delegating responsibility for teacher education to a group of faculty who possess the knowledge and experience vital to teacher education and who demonstrate a commitment to the preparation of educators.

Collaborate with others to

- establish with the college of arts and sciences a working partnership that supports shared responsibility for the education of educators.
- develop with school districts working partnerships that are founded on shared responsibility for the preparation of educators.
- develop joint appointments for faculty from the college of arts and sciences and faculty from K-12 schools to work in teacher education programs.
- work with the governor and legislators, the state certification board, certification officers, and other institutional leaders to change certification requirements so that they focus on standards for outcomes rather than on specific program requirements.

Support the faculty by

- providing alternative assignments to faculty whose interests and expertise do not focus on teacher education.
- assigning faculty positions to the teacher education unit with the understanding that these positions will be used to recruit faculty with strong commitments to and expertise in the education of educators.
- encouraging the teacher education faculty to develop reward structures appropriate to the work of preparing teachers, such as recognition of work with pre- and in-service teachers, validation of research on teaching and learning in K-12 schools, and support for collaboration with schools in renewal efforts.
- providing rewards and recognition to faculty who work effectively with pre- and in-service teachers and in school renewal activities.

Faculty. It is ultimately the faculty's duty to ensure that prospective teachers are well educated and well prepared to assume their responsibilities. With leadership from the preceding administrative groups, faculty from teacher education, arts and sciences, and area schools will provide the force to change the education of educators. The major burden will necessarily fall on faculty for designing programs, developing curricula, working with students, maintaining quality, and providing for faculty development.

In designing the program, faculty must

- assume responsibility for the conduct of teacher education.
- establish a solid foundation on the basis of schools as institutions of a democracy and of teaching as a moral commitment.
- specify the scope and sequence of the pre-education, professional education, and postgraduate curriculum.
- institute procedures for selecting students who demonstrate commitment to the moral, ethical, and enculturing responsibilities of teaching.
- develop plans to recruit students representing diversity and to provide necessary support for these students as they move through the program.

In their work with students, faculty must

- monitor students' progress throughout the program.
- establish standards for entry into the program, but provide remedial work to students with deficiencies.
- support and monitor students' development of literacy and critical thinking.
- place students in cohort groups and foster teamwork as well as individual effort.

When developing curricula, faculty must emphasize the development of critical thinking and inquiry through intellectually challenging courses and experiences; plan explicit activities to help students understand the connections between general education and pedagogy; give serious attention throughout the program to crucial issues in education, especially the moral dimensions of teaching in a democracy; and attend throughout the program to students' needs for global and multicultural awareness. [They also must…]

- create, in collaboration with school districts, professional development schools that provide consistently high-quality field experiences.

- support field experiences with seminars encouraging thoughtful analysis of the work and of issues in education as manifested in classrooms and schools.
- design course work to instill a belief that all children can learn, and use field experiences to test and reinforce that belief.
- deliberately model for students exemplary practices in curriculum planning, instruction, counseling, testing and evaluation, and establishing productive learning environments.
- plan ways to assist new teachers and use their feedback to evaluate and improve the program.

To maintain quality, faculty must

- ensure that courses, including those in general education (arts and sciences), emphasize inquiry and provide thoughtful, ongoing attention to the crucial issues of education in a democracy.
- design and implement a faculty evaluation system that emphasizes the importance of serving as exemplary models of excellent teaching.

In providing for faculty development, faculty must

- recruit and retain faculty who demonstrate an active commitment to the education of educators and who support that commitment in their scholarly activities.
- require that faculty participate in school renewal activities in elementary and secondary schools.
- encourage and support faculty to pursue research on teaching and learning in public schools and/or teacher education.

Needed Support. Restructuring teacher education programs will undoubtedly require some reallocation of resources and may call for additional resources, such as the following:

- faculty time to design new programs and follow through with implementation and evaluation.
- funding to recruit and support faculty (if the institution has an insufficient cadre of faculty with the necessary skills and commitment).
- additional faculty positions to accommodate work with students in small seminars and to ensure personal attention throughout the program.

- funding to support partnerships with schools, including joint appointments of faculty, staff development at both sites, and time for program planning and evaluation.
- funding for pilot programs and other innovations.
- support for waiving university policies or state requirements as necessary to bring about desired changes.
- rewards to faculty who provide exemplary service in the education of educators.

Resources

Access to information and expertise that may be unavailable in the institution is another kind of resource that will be needed. For example, program planners may need assistance in curriculum development, advice on campuswide problems, or information about alternatives being tried elsewhere.

Several national groups support the work of improving the education of educators. The names and addresses of those most active are included here as resources.

Mr. Roger Soder, Associate Director, Center for Educational Renewal, College of Education, University of Washington, Seattle,Washington 98195; (206) 543-6162.

Dr. David G. Imig, Executive Director, American Association of Colleges for Teacher Education, One Dupont Circle NW, Suite 610, Washington, DC 20036-2412; (202) 293-2450.

Dr. Joni Finney, Director of Policy Studies, Education Commission of the States, 707 17th Street, Suite 2700, Denver, Colorado 80202-3427; (303) 299-3354.

The Holmes Group and Michigan Partnership for New Education, Dr. Judith Lanier, College of Education, Michigan State University, East Lansing, Michigan 48824-1034; (517) 355-1734.

Project 30, Dr. Frank Murray, Dean, College of Education, University of Delaware, Newark, Delaware 19716; (302) 451-2311.

The Renaissance Group, Dr. Thomas J. Switzer, Dean, College of Education, University of Northern Iowa, Cedar Falls, Iowa 50614; (319) 273-2717.

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What College and University Leaders Can Do to Help Change Teacher Education was published as one of four guides that accompany John Goodlad's book, *Teachers for Our Nation's Schools*. These guides grew out of a project, "Advancing the Agenda for Teacher Education in a Democracy," sponsored by the American Association of Colleges for Teacher Education, the Center for Educational Renewal at the University of Washington, and the Education Commission of the States. The production and printing of the guides in this series were underwritten by grants from the Exxon Educational Foundation and the Southwestern Bell Foundation. The production and printing of the guides in this series were underwritten by grants from the Exxon Educational Foundation and the Southwestern Bell Foundation. The four guides are as follows:

- What Business Leaders Can Do to Help Change Teacher Education
- What College and University Leaders Can Do to Help Change Teacher Education

- What School Leaders Can Do to Help Change Teacher Education
- What State Leaders Can Do to Help Change Teacher Education

These foundations and others have provided substantial support for Dr. Goodlad's effort. In 1990, the Exxon Foundation alone contributed $1.125 million in grants toward the Education of Educators Project.

The opinion's conclusions, and recommendations expressed in this guide do not necessarily reflect the view or opinions of the American Association of Colleges for Teacher Education or the other groups listed above. The AACTE does not endorse or warrant this information. The AACTE is publishing this document to stimulate discussion, study, and experimentation among educators. The authors were encouraged to express their judgments freely. The reader must evaluate this information in light of the unique circumstances of any particular situation and must determine independently the applicability of the information thereto.

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What Business Leaders Can Do to Help Change Teacher Education

Diana W. Rigden

Since the early 1980s, the United States has engaged in one of the most intensive periods of school reform in its history, and, at this juncture, it appears the reform effort will continue for many years.

Driving this reform movement are both economic and demographic forces. On the economic front, this nation's young people must meet much higher educational standards if the United States is to remain competitive in the international marketplace. From a demographic perspective, the growing population of poor and underprivileged children, many of whom are minority, will be unable to participate in mainstream society unless they can be reached and educated by the public school system. Traditional schooling methods, whatever their past successes, are incapable of producing a work force for today's technological workplace and of meeting the educational needs of children whose homes and communities, at best, fail to complement—and at worst, actively undermine—the efforts of educators.

Reprinted with the permission of the publisher from Rigden, D. W. (c. 1991). *What Business Leaders Can Do to Help Change Teacher Education.* Washington, DC: American Association of Colleges for Teacher Education.

Given these circumstances, the education community, with the support, encouragement, and occasional prodding of government and business leaders, has begun to restructure schools so that they do a better job of educating all children. A few strategies are producing real changes. In most restructured schools, for example, classes are considerably smaller and centered on active learning. Students take more initiative—working in teams, writing reports, making presentations, conducting research, questioning assumptions, and learning to develop and support their own ideas. Their teachers direct, coach, lecture, and stimulate, until every student successfully masters the work.

In most restructured schools, for example, classes are considerably smaller and centered on active learning.

School Reform and the Reform of Teacher Education

Despite these signs of progress, many classroom teachers still teach by lecturing passive students or assigning exercises from textbooks. No effort to restructure schooling can succeed without also changing how teachers teach, and how they learn to teach. For research on teaching indicates that even when given the opportunity, few teachers seem prepared to change the way they teach or to try more active learning strategies.

During this decade, schools will hire two million new teachers. How well teacher education programs select, educate, and introduce these people into the schools (to say nothing of how well the schools renew those teachers who remain in the system) may be the most important factors in the success or failure of public school reform. For without well-educated and freshly motivated teachers, school reform will not succeed.

In recent years, many states have become involved in teacher education reform—instituting new regulations, requiring curricular changes (such as a liberal arts major for future teachers and a fifth year for them to learn the art and science of teaching), and mandating alternative routes to certification. More and more policy makers are exploring ways to improve the quality of teacher education programs. While states certainly have a role in licensing teachers and protecting the public's interest, some of the actions of legislatures and of boards of education have hindered, not furthered, the cause of reform.

In the two years between 1986 and 1988, standards were increased in 26 states for admission to teacher education programs and certification tests were required for entry-level teachers. Thirty-two states changed the curricula for teacher education by requiring subject-area majors, and several states proposed requiring a master's degree of everyone wishing to teach. Eleven states developed alternative certification routes to provide easy access to teaching careers for professionals in other fields. At present, certification standards are being reviewed in many states, and work is under way to develop better means of assessing both academic expertise and effective teaching.

Effective Teacher Preparation for Restructured Schools

These and other developments are promising, but thus far, genuine reform remains more conceptual than actual. Consensus has yet to emerge regarding a redesign of teacher education, partly because of a lack of understanding—firmly grounded in research—of existing practices in teacher education programs.

John I. Goodlad's latest book, *Teachers for Our Nation's Schools* (1990), offers the context that is needed to begin the change process. This broad, systematic study of teacher education programs in the nation's colleges and universities identifies structural weaknesses that impair many teacher education programs, describes essential elements for effective programs, and provides a blueprint for the simultaneous renewal of schools and the education of educators.

Reading Goodlad's report, one gains a sense of how complex the problems are of reforming teacher education. Using his findings and those of other researchers, business leaders can discuss ways to assist with teacher education reform by focusing on the following essential characteristics of an ideal teacher education program.

Future teachers must receive an improved general education.

In recent years college-level general education requirements and courses have been heavily criticized as inadequate. A 1988-89 survey by the National Endowment for the Humanities, for example, reveals that students can graduate from 38 percent of the nation's colleges and universities never taking a history course, from 45 percent without studying literature, from 77 percent without studying a foreign language, from 41 percent without taking mathematics, and from 33 percent with no study of the natural or physical sciences.

Not all people learn in the same way, and different subjects require different methods of teaching.

If these are general requirements for all students, what does this mean for future teachers? Many future teachers graduate and join the work force poorly prepared in basic academic subjects. The nation cannot expect teachers with the barest minimum in, say, mathematics and science to equip students for a role in a high-technology society—or to nurture in students the belief that every student, regardless of sex or race, can acquire quantitative skills. Likewise, if teachers do not learn to read critically and write a cogent, coherent paragraph or letter, they cannot be expected to teach their students the art of clear thinking and communication.

Future teachers must learn a variety of ways to teach their students.

When one looks carefully at teaching and learning, two things become apparent: Not all people learn in the same way, and different subjects require different methods of teaching. Successful teachers keep students enthusiastic about learning by varying the way materials are presented. For example, sometimes a teacher engages students in hands-on activities, and at other times, emphasizes in-depth reading and discussion.

Educational research, both theoretical and practical, has made great strides in recent years in identifying successful strategies for teaching diverse groups of people and various academic subjects. Such strategies include effective techniques for observing and diagnosing student abilities, planning and managing programs and resources, communicating with peers and parents, and evaluating student achievement and instructional effectiveness. The next steps are to apply this research in the classrooms of both the nation's children and their future teachers, and to continue further research.

Helping teachers develop an array of teaching strategies is one of the pressing goals of school reform. Teacher education programs must exhibit this broad array of strategies to future teachers, and not leave them to learn through trial and error on the job.

A related problem concerns conditions in the schools. Even if future teachers were to learn effective teaching strategies in their teacher education programs, they often would find their innovative ideas stifled by tradition-bound colleagues in the schools and by system regulations. This problem illustrates Goodlad's point that teacher education reform must occur simultaneously with school reform.

A core group of academic and clinical faculty must be assigned responsibility for developing an effective teacher education program.

Teacher education is rarely considered a priority on college campuses, nor, typically, do most institutions assign an identifiable group of faculty the responsibility for designing and implementing the teacher education program. The result is an incoherent, diffused course of study for future teachers.

When restructuring its teacher education program, a college or university must recruit and support a core faculty, drawn from the college as well as the schools, and give this group decision-making authority. The college or university also must establish for the group a clear organizational identity and a constancy of budget and personnel.

Students must be recruited into teacher education because of both their commitment to teaching and society's goals for education.

Admission to teacher education programs is not systematically related to the goals of teacher preparation. Too often students are allowed to pursue education majors without demonstrating their suitability for or commitment to careers in teaching. Recruitment and selection programs also must consider how a democratic nation's economic and social goals relate to education. For example, special attention must be paid to recruiting and graduating more science and mathematics teachers and more minority teachers.

Two trends are of concern with regard to minority teachers: First, their number is dramatically declining while the number of minority children in public schools is swelling, and, second, many of these minority students are poor and disadvantaged. These trends make educational intervention and compensatory programs essential at every level of schooling, from preschool onward. Unless such programs are instituted, the higher standards to which all teachers will be held will reduce still further the proportion of minority teachers.

The number of students accepted into a teacher education program must not exceed the space available for clinical experience.

At many institutions, more students are admitted to teacher education programs than can be provided with high-quality, closely supervised clinical experiences. This institutional practice must stop, even if it means lost tuition revenue for the institution.

Teacher education must be linked closely with teaching practice, especially in restructured school settings.

The loose relationship between teacher education programs and public schools makes the student teaching experience irrelevant at best; at worst, it reinforces the status quo in teaching and begins the process of convincing new teachers to leave the profession.

The school-university relationship can be strengthened in many ways, but particularly by forging links between research, reform, and teaching. In model reform efforts in the schools, for example, teachers are developing many innovative classroom practices that can be incorporated into teacher education programs. Conversely, researchers in colleges and universities can work more systematically to make research available in applied form to the practice of current and future teachers. For a more direct link between research and teaching, researchers can engage teachers in developing research topics and collecting and interpreting data. The key is for researchers to understand that teachers possess a tremendous amount of experiential knowledge, and they expect to be treated as equals in any partnership.

Another important goal is to develop in teacher education programs some means of methodically following up graduates. This would benefit both the program and the graduates. New teachers are in a unique position to help faculty reflect on the effectiveness of the teacher education program, and they should be part of any evaluation and reform.

The Task Ahead

Despite many of the achievements of the current school reform movement, schooling in America is still in serious trouble. Goodlad's recommendations in *Teachers for Our Nation's Schools* offer hope. By linking school reform with reform of teacher education, the chances are substantially increased for lasting improvements in schooling.

By linking school reform with reform of teacher education, the chances are substantially increased for lasting improvements in schooling.

Creating the kinds of schools the nation needs and educating the kinds of teachers those schools need mean concentrated, serious work for at least the next two decades. Part of the effort must take into account the changing demographics of the student population and the changing social context of schooling. The successful simultaneous reconstruction of teacher education and the schools will require diligence, careful management, resources, and patience. An even more important requirement will be the ability and willingness to think clearly and stay the course.

What Business Leaders Can Do to Help

The problems facing teacher education can be solved only by sustained reform, linked closely to dramatic efforts to restructure elementary and secondary schooling. Educators can restructure teacher education only by changing in a fundamental way both the academic education and the practical experiences of future teachers.

As the joint effort to reform teacher education and schools gathers momentum, business leaders will have many opportunities to participate in the partnership that Goodlad envisions. He considers business to be an integral ally of education.

Putting together a company program to support the reform of teacher education, as with any aid-to-education program, involves three steps: First, know the issues, and under what conditions and with what success they can be addressed. Second, choose options or entry points most suited to company expectations and needs, to the needs of future teachers, and to the larger teacher education context. And third, manage the program well by developing a clearly focused strategy, monitoring its progress, and recording its effectiveness. Businesses that make a commitment to evaluate and document their programs will be creating a much-needed (and largely nonexistent) body of information about what does and does not work, and under what conditions. That kind of information will prove invaluable to others searching for ways to move more efficiently through the change process.

The preceding pages were intended to contribute to the business community's knowledge about major issues and goals of teacher education. The following section describes specific suggestions of ways corporate funders, concerned about the quality of classroom teachers, can develop and support appropriate projects to promote better teacher preparation.

Help design more effective general education curricula.

Business leaders are understandably reluctant to recommend how faculty should develop curricula or plan a coherent, sequenced preteaching program. However, they can play a role in improving core curricula for future teachers, as well as for elementary and high school students. The following strategies suggest how.

- **Link core curricula for teachers to specialists in the fields.** Teacher education for elementary and secondary teachers must include preparation in subject-area content as well as how the subject is structured and how it is taught. Future teachers need both a solid grounding in academic subjects and an understanding of how best to teach subjects to diverse students in different grades. Business leaders can be useful in helping to bring subject-area specialists (practitioners and academics) more fully into teacher education programs to strengthen the content, structure, and sequence of courses, to improve curricula, create model courses, and set up pilot sites.

- **Develop case studies for future teachers.** Business people are certainly familiar with the case-study method of teaching popularized by the Harvard Business School in its MBA program. Spurred by research conducted at Pace and Stanford universities, many teacher education programs are beginning to use case studies, but the number of quality studies available is limited. Business leaders can help develop, write, and evaluate case studies for use with current and future teachers.

- **Identify workplace skills.** The gap between what employers need from entry-level workers and how schools prepare these workers continues to widen. Business leaders can work with teacher educators and school leaders to identify needed workplace skills and attitudes, so that these can be incorporated into the restructured curricula of teacher education and the public schools. Teachers should not have to wait until their school is "adopted" by a business to learn that employers seek versatile, adaptable workers with strong analytic, quantitative, communication, and decision-making skills, but evidence shows that such a list of employee qualities surprises even veteran teachers. They expect a corporation to define ideal workers far more narrowly and consequently do not prepare young people adequately for the changing workplace. If companies would communicate their needs at the time teachers are being educated, then teachers would have more realistic ideas of the kinds of skills they should cultivate in their students.

> *Business leaders can work with teacher educators and school leaders to identify needed workplace skills and attitudes, so that these can be incorporated into the restructured curricula of teacher education and the public schools.*

- **Encourage state education policy decisions that promote an excellent general education and a structured academic program for future teachers.** As learned through school reform efforts, business has the power to bring difficult education issues to the attention of state and local officials, and to influence creative approaches to solving them. Unless state education policies are revised to ensure that future teachers are provided a rigorous and challenging education, and that they are carefully educated to teach what they know well to their students, teacher education reform will never happen.

Make sure teachers know a variety of ways to teach.

Training on the job is the forte of the business community. The proposed reforms calling for sustained professional education through practice and analysis should provide a close fit for companies interested in supporting teacher education reform.

- **Expand knowledge about how best to teach certain subjects.** Businesses can focus on their "seed corn" disciplines, those subjects most important to the continued health of the industry, and help teachers and researchers develop the most effective methods for teaching these disciplines and evaluating students' mastery of the subjects. For example, most business people are familiar with the concern that far too few females, Native, African–, and Hispanic–Americans are in the mathematics, science, and technology pipeline. These groups do not take the necessary courses in elementary and secondary schools, they do poorly in the less-challenging courses they do take, and they major in nontechnical fields in college, if they attend college. They simply are unqualified when industry seeks to hire for technical jobs. Business can help find answers to questions that might illuminate the problem: How early do these students drop out of the pipeline? Could different strategies in elementary school science or math teaching make a difference? What ways will keep students of various ages and different backgrounds interested and motivated in technical subjects?

- **Set up an individual partnership program between employees and teacher education programs.** Business people frequently complain that teachers do not understand the real world (that is, business) and, therefore, cannot prepare students adequately to participate in it. While many companies provide company mentors and part-time work for students, and others hire teachers as summer interns, none is known to work directly with future teachers or teacher educators to help them learn ways to connect the subjects they teach to the world around them.

Many links between school subjects and corporate activities are natural. For example, science, mathematics, and computer teachers link with technical, scientific, and laboratory personnel; writing and language arts with marketing and office management; history, social sciences, and political science with governmental affairs; vocational education and home economics with education and job training; counseling with human resources. Teachers, and the teachers of teachers, could benefit greatly by learning practical applications of the skills and knowledge they teach.

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Create a model teacher education program.

The business community is not likely to have—nor should it have—a direct impact on the internal norms and priorities of colleges and universities. Indirectly through donations, endowments, and scholarships, however, business can help enhance the prestige of teaching.

- **Help create effective clinical schools.** Using the model of teaching hospitals, many schools of education are beginning to establish relationships with local school districts to set up special schools that provide student teachers with extended, well-supervised experiences in classroom teaching and school interactions. These programs are known by various names: clinical schools, professional development schools, professional practice schools. These schools require long-term commitments of time, energy, patience, cooperation, and effort from school system teachers, administrators, and staff, and from university faculty and administrators. Companies, especially those who enjoy partnerships with individual schools, should seriously consider working closely with or helping establish clinical schools to support effective programs for preparing future teachers.

- **Assist in creating a Center for Pedagogy on campus.** To establish the prototype teacher education programs proposed by Goodlad, colleges and universities must completely restructure the way they recruit and reward faculty, recruit and support students, design curricula, develop admission and graduation requirements, and work with local school systems. Business leaders can support such restructuring through investments of resources and talent. Both short-term individual projects and long-term reform efforts can use such support.

- **Make sure teacher education is firmly grounded in research.** Social and behavioral science research and educational research provide a substantial and essential body of information about how children develop and learn, yet such knowledge rarely is integrated systematically into teacher preparation or practice. On a large scale, business can fund work on the professional knowledge base within a consortium of institutions developing prototype centers for pedagogy. On a smaller scale, business can support projects to consolidate knowledge about how best to teach one or more subjects of special interest to an industry. Examples include funding literature reviews or creating bibliographies and classification schemes of current research.

Recruit top-quality students.

Although the numbers may vary from report to report, it seems clear that America's schools face an impending teacher shortage in the near future, especially in mathematics and science and among minority groups. To increase the number of top-quality, committed teachers in the nation's classrooms, business must help teacher education programs recruit excellent students and develop effective retention programs to support them during their teacher preparation.

- **Provide scholarships and fellowships to future teachers.** Many companies offer special scholarship programs to attract young people into teaching, but more programs are needed. In some scholarship programs, students are identified early in high school and given additional academic support through special tutoring or mentoring programs. Often scholarship and fellowship programs are tailored for specific audiences (for example, underrepresented minorities) and/or specific subject areas (mathematics, science, technology).

- **Improve the capacity to recruit and graduate more minority teachers.** Increasing the number of minority teachers is a two-fold problem. At the college level, business can help teacher education programs provide effective support services, academic development programs, and career counseling for their minority students. These kinds of programs help assure success. At the elementary and secondary levels, similar academic, counseling, and support programs are needed to assure that minority students are well prepared for college.

Link teacher education with school reform.

Many, if not most, of the exciting and innovative ideas being tried in classrooms around the country are neither modeled nor described in teacher education programs. As a result, new teachers reach their first classroom knowing little about the issues of school reform and efforts to address them. Business can help bridge the gap in several ways.

- **Create networks to link clinical school/university partnership programs.** Networks that link clinical school/teacher education partnership programs in one part of the country with those in other parts are essential to the exchange of innovative ideas and research. Business can help, for example, by improving or establishing computer and facsimile networks, by underwriting the production of newsletters and other printed materials, and by sponsoring conferences and seminars.

- **Develop linkages between nonpartner school districts and teacher education programs.** Many schools and school districts will never be associated with a formal teacher education partnership. Yet, these schools also are restructuring their programs, and their teachers have important experiences to share with teacher educators. By establishing computer linkages, developing exchange programs, and so forth, business can encourage links between these creative, and often isolated, programs and future teachers to promote the best classroom practices. Such linkages can help teachers dispel some of the professional loneliness that comes with the job, and give them opportunities to honor each others' accomplishments.

- **Fund research in which teachers participate in defining, collecting, and interpreting data.** Research faculty from colleges and universities usually analyze teaching and learning through academic rather than applied research, observing but not engaging in the daily process of teaching. It would be useful to augment their research with field studies conducted by practicing teachers, who possess a wealth of experiential knowledge. Teachers would benefit in this process by discovering relationships between how they teach and how their students learn.

Attempts to reform teacher education are hindered by a mismatch between the vision of empowered teachers and the tools available to measure teacher effectiveness.

- **Develop new assessment models based on new definitions of excellent teaching.** Attempts to reform teacher education are hindered by a mismatch between the vision of empowered teachers and the tools available to measure teacher effectiveness. Neither old nor new teachers will practice excellent teaching if their performance evaluations are based on how quiet their classrooms are, or on whether they have reached the assigned page in the curriculum manual by October 10. It is imperative to measure how well teachers perform by standards that reflect the type of teaching and learning desired. Performance evaluators need to extend the way they assess teachers, for example, by learning to recognize how teachers coach students successfully, lead students to think independently, and organize classes to encourage cooperative learning and group work. Drawing from their experience in performance assessment, business leaders can help develop better ways to assess teachers.

The Business Approach to Teacher Education Reform

Putting together a company program to support teacher education reform involves two kinds of calculations: one to determine the program focus, and the other to determine the kinds of resources (money, staff time, CEO involvement, and so forth) that will be committed to the program. These calculations are neither mutually exclusive nor sequential; program planners must consider both simultaneously and consider how one affects the other.

Making choices among strategies and options is a matter of balancing corporate and community needs and expectations. A program consonant with a company's work force needs, its corporate style, or its existing education-support interests is more likely to be sustained over time.

The approaches outlined in this guide should be regarded as illustrative rather than comprehensive. In the next few years, much more effort must be placed into developing grant-making programs that offer real support for the teacher education reform agenda. More than anything else, however, prospective corporate funders must work hard to take the long view.

Resources

For more information on teacher education reform and how business leaders can assist, please contact:

Mr. Roger Soder, Associate Director, Center for Educational Renewal, College of Education, University of Washington, Seattle, WA 98195, 206/543-6162.

Dr. David G. Imig, Executive Director, American Association of Colleges for Teacher Education, One Dupont Circle NW, Suite 610, Washington, DC 20036- 2412, 202/293-2450.

Dr. Joni Finney, Director of Policy Studies, Education Commission of the States, 707 17th St., Suite 2700, Denver, CO 80202-3427, 303/299-3354.

Mr. L. Scott Miller, Senior Vice President, Council for Aid to Education, 51 Madison Ave., Suite 2200, New York, NY 10010, 212/689-2400.

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- What Business Leaders Can Do to Help Change Teacher Education
- What College and University Leaders Can Do to Help Change Teacher Education
- What School Leaders Can Do to Help Change Teacher Education
- What State Leaders Can Do to Help Change Teacher Education

These foundations and others have provided substantial support

fore Dr. Goodlad's effort. In 1990, the Exxon Foundation alone contributed $1.125 million in grants toward the Education of Educators Project.

The opinions, conclusions, and recommendations expressed in this guide do not necessarily reflect the view or opinions of the American Association of Colleges for Teacher Education or the other groups listed above. The AACTE does not endorse or warrant this information. The AACTE is publishing this document to stimulate discussion, study, and experimentation among educators. The authors were encouraged to express their judgment freely. The reader must evaluate this information in light of the unique circumstances of any particular situation and must determine independently the applicability of the information thereto.

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How Mathematics Content Courses Must Change in Light of Technology and the NCTM *Curriculum Standards*

Mary Montgomery Lindquist,
John Harvey and Christian Hirsch

Introduction

Christian Hirsch

The *Curriculum and Evaluation Standards for School Mathematics* (NCTM, 1989) provides a new vision of mathematics and mathematics learning for today's world, a world in which it is commonplace for calculators and computers to process mathematical procedures and where mathematics is increasingly being applied in many diverse fields. Central to this vision are curriculum and instructional practices that focus on the development of self-confidence, mathematical reasoning, problem solving and communication. Today's narrow K–12 curriculum with its emphasis on routine drill of paper-and-pencil computational algorithms and algebraic procedures must give way to a broader, technology-rich curriculum for all students—one that includes geometry, measure-

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Reprinted with the permission of the publisher from Lindquist, M.M., Harvey, J. & Hirsch, C. (1991). How mathematics courses must change in light of technology and the NCTM Curriculum Standards. In Demana, F., Waits, B.K., and Harvey, J. (Eds.). *Proceedings of the Conference on Technology in Collegiate Mathematics* (pp. 20–27). Reading, Massachusetts: Addison–Wesley.

ment, data analysis, functions, probability, and discrete mathematics developed in a variety of contexts and with deliberate connections among the strands.

The *Standards* not only suggests changes in *what* is taught, but also *how* it is taught. Traditional, authoritarian modes of instruction must give way to instructional patterns that recognize the active role for students in constructing their own knowledge. Because calculators and computers not only alter what is important in mathematics, but also virtually force a new classroom dynamic, the *Standards* is explicit about the place of these technologies in school mathematics programs. In particular,

- appropriate calculators should be available to all students at all times;
- a computer should be available in every classroom for demonstration purposes;
- every student should have access to a computer for individual and group work;
- students should learn to use the computer as a tool for processing information and performing calculations to investigate and solve problems. (NCTM, 1989, p. 8)

Calculators for middle school should include the capability for computations in both decimal and common fraction form. At the high school level, calculators are to have graphics capability.

The Vision and the Reality

Undergraduate mathematics will play a pivotal role in the successful implementation of the new curriculum standards. Placement examinations send a powerful message of what mathematical skills, modes of thought, and facility with technology are valued by colleges. Expectations of calculus will either fuel or curtail the rate of change in secondary school mathematics curricula. Discrete mathematics, statistics, and geometry (particularly from an algebraic perspective) must be prominent in the content preparation of teachers if these strands are to be elevated to a more central position in school mathematics programs. Teachers teach much in the same manner as they were taught. Thus, the extent to which prospective teachers use calculators and computers as tools for learning and doing mathematics and routinely engage in exploring, constructing, symbolizing, applying, and generalizing mathematical ideas will determine in very large measure the nature of discourse in their own classrooms.

Let us briefly turn from the vision to the reality. Last year the cover sheet on the first departmental exam in the mainline calculus sequence at a Big Ten university included the constraint: "Use of slide rules and/or calculators is prohibited on this exam." What does this say to visionary schools that are attempting to incorporate graphics calculators throughout their curriculum? What message does this send to prospective teachers enrolled in such a course? One might discount this item as simply an oversight or an isolated incident. However, it is more likely the case that what is evidenced here is but a symptom of a more pervasive problem: "Mathematicians seldom teach what they think about—and rarely think deeply about what they teach" (NRC, 1989, p. 40) or test.

It is heartening to see so many mathematicians at this conference who obviously do care and think deeply about their teaching. No reform of school mathematics will be possible unless there is simultaneously a revitalization of undergraduate mathematics, particularly the content and teaching style of courses taken by prospective teachers. We first consider courses unique to the preparation of elementary and middle school teachers.

The Five Cs: Preparation of Elementary and Middle School Teachers

Mary Montgomery Lindquist

There are five Cs to consider when examining the mathematics preparation of elementary and middle school teachers: concepts, communication, connections, and calculators/computers. After discussing each of these, I will return with a question for you: What is the missing C?

Concepts

Technology provides such powerful ways to do computation and other routines that it is essential to provide elementary and middle school students a strong conceptual basis. This is one of the clear messages of the *Standards,* and one that is echoed by business and industry who need a numerate workforce.

Unless we help teachers develop conceptual understandings, we have little chance of building these understandings with elementary and middle school students.

Unless we help teachers develop conceptual understandings, we have little chance of building these understandings with elementary and middle school students. It is evident from the following two examples that students in middle school, high school, and entering college lack basic conceptual underpinnings.

In the fourth mathematics assessment of the National Assessment of Educational Progress (Lindquist, 1989), students in the seventh and eleventh grades were asked to find the area of a rectangle given its length and width, and the area of a square given the length of one side. About 45 percent of the seventh-grade students and 70 percent of the eleventh-grade students could find the area of the rectangle, but only about 10 percent of the seventh graders and about 45 percent of the eleventh graders could find the area of the square. Further investigation revealed that students, given two dimensions of a figure, multiply, and given more than two dimensions, add. Routines such as this are not based on solid, conceptual understandings of area and perimeter.

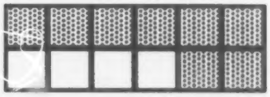

Figure 1

On the pilot of the Mathematical Association of America's placement test for Arithmetic and Skills, entering college students were asked to choose the fraction represented by the part shaded in Figure 1. Although 60 percent chose 2/3, I imagine that most of these first had to say it was 8/12 and then "reduce" the fraction to 2/3. I doubt that many have a strong enough conceptual basis of fractions to see immediately the thirds and that two-thirds were shaded.

Hopefully, we are attracting better students than those who had difficulty with the two previously cited examples, but my experience with prospective teachers does not alleviate my concern about their conceptual understanding. I think that most of you also have a substantial number of future teachers who would have difficulty with these items.

No matter what content we choose to include in the preparation of elementary and middle school teachers, we must teach and test for conceptual understandings. We are beyond the days of preparing these students to perform as $4.95 calculators.

Communication

The *Standards* (NCTM, 1989, p. 6A) notes, "As students communicate their ideas, they learn to clarify, refine, and consolidate their thinking." We have for too long had silent mathematics classes. Students cannot express themselves orally; they often have related everyday language to mathematical language; and they have not made mathematical language make sense to them. It is critical for our future and present teachers to be able to talk mathematically, to explain the meanings, and to be able to think mathematically.

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We have students to whom $12 \div 3$ means only find the answer 4. Some cannot even read this phrase as 12 divided by 3; nor do they know how to interpret its meaning in terms of real situations. No wonder mathematics is a mystery to these students.

We must have collegiate mathematics classes that encourage our teachers to talk, read, listen, and write. You can help these students through cooperative learning, journal writing, projects, oral presentations, discussions, and interviewing your students. It may be painful for you at first to listen, but, remember, they will be the ones that will begin your children or your future mathematics majors with their study of mathematics.

Connections

Another one of the standards that is common to all grade levels is that of connections. We have taught our students isolated concepts and procedures. The mathematically bright ones make the connections, but for the majority mathematics remains a collection of rules and procedures. If a rule is forgotten, there is little recourse for many.

There are many connections that are mentioned in the *Standards,* but let me emphasize only one today—that of connecting the conceptual to the procedural. If you can help students make the connections between concepts and procedures, then they will begin to see mathematics as a body of knowledge that makes sense. Here is one simple example that you can use in your mathematics courses for elementary teachers.

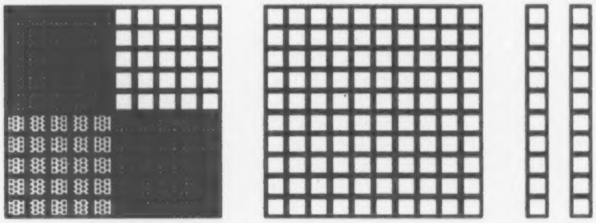

Figure 2

Have the students explore the divisibility rules for 2, 4, 8, 3 and 9. First, discuss what it means to divide by, say 4 (share equally among 4 people). (See Figure 2.) Then discuss whether 100 blocks of chocolate candy could be shared equally. (Yes). Therefore, how about two 100 blocks? What about ten 100 blocks? (Thus, we see 1000, 100,000, etc. can be shared equally.) Use models and help them connect the sharing concept to the divisibility rules. Consider 54, 321. We can share 5 ten-thousands, 4 thousands, 3 hundreds. All we need to consider is the 21. Since 21 cannot be shared with 4, then $54,321 cannot be.

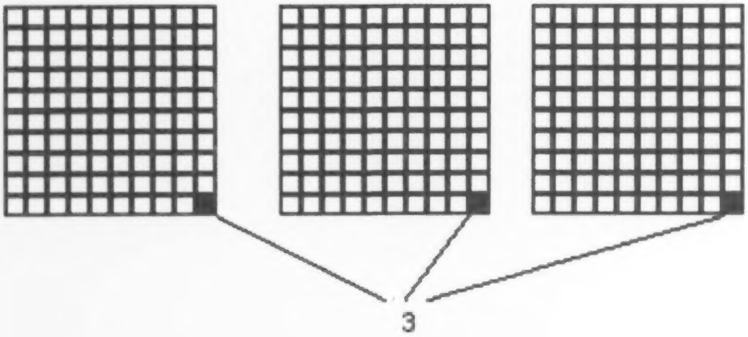

Figure 3

Now, what about a divisibility test for 9. Let's try 325. Note, for each unit—100, 10s (and even 1000s, etc.)—we can always share all but one piece of chocolate among 9 people equally (see Fig. 3). We are left with 3 from the 3 hundreds, 2 from the 2 tens and 5 from the ones, or 3 + 2 + 5 to share (see Fig. 4).

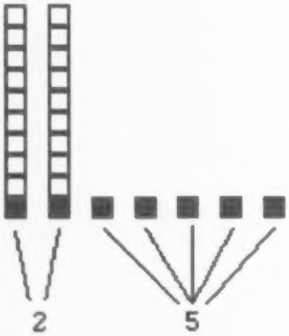

Figure 4

Calculators/Computers

The fourth C is calculators and computers. At a technology conference, little needs to be said except that your use in classes and testing for elementary teachers will help make calculators legitimate. It has been my experience that most of these students do not know how to use much more than the four functions. A particularly useful calculator for this group is the Explorer Calculator from Texas Instruments. There is a keystroke sequence that reduces fractions and gives the common factor that it uses. The students of one of my students, a middle school teacher, quickly discovered how to use this for finding whether or not a number was prime and finding the prime factors of a composite number. Can you?

Teachers need to see how they can use computers to learn mathematics. They will know about the drill and practice aspect, so use spreadsheets, *Logo*, or other software to explore mathematics.

Fifth C

If we do not work with our elementary and middle teachers, we have little hope of making lasting change in our mathematics programs at any level. It is at these grade levels that we establish attitudes toward mathematics and an understanding of what mathematics entails. We must help mold the teachers' attitudes—they can learn mathematics, but only if we work on that missing C.

What is the missing C? **Confidence.** Our elementary and middle school teachers must have confidence that mathematics makes sense and that they can learn and teach mathematics. We, in turn, must have confidence in our elementary and middle school teachers. And, we must have confidence that we can make a difference.

Preparation of High School Teachers

John Harvey

Changing the practices of mathematics teaching depends on teachers, but teachers cannot effect such reform without substantial systematic support and change.

Professional Standards for Teaching Mathematics

In recent years it has been announced repeatedly that elementary and secondary education, and especially mathematics education, is not meeting the needs of students, society, or the nation's businesses (Conference Board of the Mathematical Sciences, 1982, 1983; National Research Council, 1989; National Science Board Commission Precollege Education in Mathematics, Science, and

Technology, 1983; NCTM Commission on Standards for School Mathematics, 1989; U. S. Department of Education, 1983). Included in almost all of the proposals for the improvement of mathematics education is a provision that students should become adept in using appropriate technologies as assistants in learning mathematics and solving problems and as a way of downplaying the present overemphasis on the teaching of skills, algorithms, and procedures. Moreover, technology is prominent in the way in which mathematics is practiced and used in business and industry (Steen, 1987).

Everybody Counts! (National Research Council, 1989), *Reshaping School Mathematics* (Mathematical Sciences Education Board of the National Research Council, 1990) and the NCTM *Curriculum and Evaluation Standards for School Mathematics*[1] (NCTM, 1989) propose that technologies be used extensively throughout all of school mathematics instruction. The NCTM *Standards* most clearly defines the kinds of technologies that its authors expect students to use, how it expects students to use those technologies, and, based upon these expectations, what the school curriculum should become. Briefly, the *Standards* states that in the elementary school grades students should have a four-function calculator, that middle school students should have a fractions calculator, and that high school students should have a graphing calculator. In addition, the *Standards* outlines a growing involvement with and access to computers and computer software for students and expect computing to be an integral part of mathematics instruction.

The picture of the use of technologies in school mathematics presented by the NCTM *Standards* is one to which I subscribe. I believe that if accurate, full implementation of the *Standards* can become reality, mathematics education in this country will greatly improve. One of the changes that will contribute most heavily to that improvement will be the use of technologies. I cannot substantiate, as yet, that the use of technologies in mathematics instruction will have the kind of effects that I claim for them, but there is a small amount of evidence. During 1988-89, students using the precalculus materials developed by the Ohio State University Calculator and Computer Precalculus Curriculum (C^2PC) Project showed remarkable gains in achievement; these gains were much greater than were those of comparable students enrolled in "traditional" precalculus courses (Frank Demana, Bert Waits, and Alan Osborne, personal communication).

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[1] Throughout the remainder of this paper I will refer to this proposal as the NCTM *Standards* or *the Standards*.

I also believe that the picture presented by the *Standards* is attainable. I have had enough experience teaching the C^{2}PC materials (Demana & Waits, 1990) to college students in college algebra and precalculus courses that I am convinced that students can learn to use technologies effectively, that they show increased interest in and motivation for learning mathematics when using those technologies, and that the mathematics being taught to them can emphasize conceptual learning, problem solving, and applications. In addition, C^{2}PC high school teachers indicated that they had made similar conclusions about their students (*cf.*, Harvey & Osborne, 1991).

Present Teachers and Teacher Education Programs

The preparation of almost all of our present elementary and secondary school teachers did not include (a) mathematics instruction using technologies or (b) adequate consideration of the use of technologies in teaching mathematics. Most of these teachers have had little or no experience in teaching mathematics with technologies.

For example, consider the elementary and secondary preservice teacher education programs at the University of Wisconsin–Madison (UW–Madison). Mathematics faculty who teach the mathematics courses for prospective elementary school teachers usually permit but do not encourage or require their students to use calculators; computer technologies are almost never used in these courses. The mathematics methods course for prospective elementary school teachers only spends a small fraction of the semester discussing the available software for elementary school mathematics and the ways in which calculators might be used within the existing mathematics curriculum. There is not time in this course to discuss the ways in which the mathematics curriculum can and should be restructured to take full advantage of present-day technologies or to fully explore the capabilities of these technologies (e.g., Texas Instruments' *Math Explorer*). Thus, elementary school teachers who are graduates of the present UW–Madison program will have little idea of how to implement the technology portion of the *Standards*.

The UW–Madison teacher preparation program for secondary school teachers of mathematics is equally deficient. There are only limited uses of calculator and computer technologies in undergraduate mathematics courses. The use of technologies to teach mathematics is not discussed extensively in the UW–Madison secondary mathematics education courses. Thus, graduates of our secondary teacher preparation program in mathematics will also be unprepared to use technologies in their mathematics instruction as well.

It may be true that the teacher education programs at the UW–Madison are not typical. However, present mathematics and mathematics education textbooks and the other teacher certification programs with which I am familiar lead me to the same conclusions that I made about the UW–Madison teacher certification programs.

Needed Changes in Teacher Education

There are some who will argue that mathematics teachers, and especially secondary mathematics teachers, should be able and expected to learn how to use calculators and computers in instruction with little or no assistance once they have become computer literate. One basis for this argument is that almost all present secondary school teachers and college and university faculty who are using calculators and computers in their mathematics courses are self-taught. This group, however, includes only a small part of the mathematics faculties of our secondary schools, colleges, and universities; my observation is that they tend to be highly motivated to engage in these tasks and often have advanced knowledge of both computer science and computer operation. The secondary school mathematics teachers who engage in self-education also seem to have better mathematics educations than do their colleagues who have not embraced the use of technologies in mathematics instruction. I believe that the majority of secondary school mathematics teachers will not have the time, the inclination, or the necessary technological or mathematical knowledge to succeed in the same way as has this small group. Thus, if we depend upon self-improvement, only small numbers of secondary school mathematics teachers will become mathematically literate in the use of technologies.

My own observation of secondary school mathematics teachers is that their teaching more closely resembles the way they were taught collegiate mathematics…

It has often been observed that teachers tend to teach as they have been taught (NCTM Commission on Teaching Standards for School Mathematics, 1989). My own observation of secondary school mathematics teachers is that their teaching more closely resembles the way they were taught *collegiate mathematics* than anything else, including the innovative ways of teaching that are often discussed in their methods courses. The reasons that secondary school teachers so closely mimic the ways in which they were taught in their college or university are unclear. One possible reason that is important here is that they may believe that in order for their students to be successful in the postsecondary mathematics courses they take, they will need to be accustomed to the way in which mathematics is taught at that level. There also may be a belief that only the ways they (secondary school mathematics teachers) have been taught will produce knowledge that is mathematically correct. No matter the reasons, it seems unlikely that we can quickly get secondary school teachers to teach in ways other than those by which they have been taught. Thus, present and future mathematics teachers will not use technologies in teaching unless they regularly experience the use of technologies in the mathematics courses they take at both the preservice and inservice levels. A single technology intensive course or a "stronger dose" of the use of technologies in mathematics education courses will not be enough, it seems to me. Here is an example that, I think, shows this is true.

For many years the secondary mathematics education program at the UW–Madison has required students to take an introductory computer science course. This course is one in which they learn a high-level programming language such as Pascal or FORTRAN; thus, by most definitions these students are *computer literate*. We also require students to take a secondary mathematics curriculum course. Recently, when I taught this course we spent about three weeks on the use of technologies in school mathematics. The class of twenty[2] was divided into groups of two or three and each was given a piece of mathematics software to study and use; for example, one group was given *Master Grapher* (Waits & Demana, 1986) and the C^2PC materials. Each group was told that they were to become familiar with the operation of the software and that in their presentation and subsequent paper they were to present well-developed ways in which the software could be integrated into the secondary school curriculum. Most of the groups learned to use the software ably. However, only a few of the groups were successful at finding significant ways of using their software in teaching mathematics. Even though as juniors and seniors they had taken advanced mathematics courses, they had just discussed the content of the middle and high school mathematics curriculum in this course, and some of them were presently engaged in their practicum experience where they regularly worked with students in school classrooms. At the very end of the spectrum was the group that were given *Master Grapher* and the C^2PC materials. This group pronounced *Master Grapher* too difficult for high school students to use and did not discuss any ways in which this graphing utility and the accompanying C^2PC materials could be used. I found this result both amazing and disappointing.

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[2] The students enrolled in this class were juniors and seniors. All of them had taken the required computer science course and two or more advanced undergraduate level courses. Some of the students were also minoring in computer science and had completed some portion of the required courses in that program.

What Is Proposed?

This paper begins with a quote affirming that mathematics teaching will not change unless teachers receive substantial support. However, the *Professional Standards for Teaching Mathematics*[3] (NCTM Commission on Teaching Standards for School Mathematics, 1989), from which that quote was taken, is almost silent about the changes teachers should be expected to make and the amount and kind of support that college and universities should be providing to teachers in their preservice and inservice programs. In the *Teaching Standards* there is only one instance in which technologies are mentioned; that instance is:

> The teacher of mathematics, in order to promote discourse, should encourage and accept the use of…computers, calculators, and other technology. (p. 33)

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[3] Throughout the remainder of this paper I will call this document the NCTM *Teaching Standards* or the *Teaching Standards*.

The NCTM *Teaching Standards* are silent on the responsibility of colleges and universities though they indicate that:

> College and university faculty and administrators need to take an active role in the professional development of teachers of mathematics by accepting responsibility for modeling appropriate pedagogical strategies in both mathematics and mathematics education classes....(p. 105)

The charge to the Commission on Teaching Standards for School Mathematics did not ask them to prepare proposals for preservice and inservice mathematics teacher education programs, but still I am disappointed that the NCTM *Teaching Standards* does not speak more directly and more strongly about the use of technologies in teacher education programs since these are the standards that, we hope, are going to be applied to mathematics teachers during the next few years.

Since there are presently no concrete proposals for the incorporation of the use of technologies into programs for secondary school mathematics teachers, I will make some recommendations based upon an examination of the NCTM *Standards.* My recommendations will be couched in terms of what is presently available and will need to be revised and extended as calculators and computers become more capable and user friendly and as computer software is developed that can be effectively used in college-level mathematics and mathematics education courses.

First, I would like to recommend that, as nearly as possible, technologies be regularly used in all undergraduate mathematics courses taken by students intending to become secondary school mathematics teachers. Figure 5 on the following page describes some of the technologies that would be helpful.

If technologies are effectively and regularly used in our students' mathematics courses, then the mathematics education courses they take will be better able to help those students learn to use technologies as they teach in secondary schools. However, the mathematics

Course	Technology
Precalculus (including college algebra and trigonometry)	Graphing calculators, computer graphing utilities
Introductory one-dimensional calculus	Graphing calculators, computer graphing utilities
Multivariable calculus	Mathematica™ Maple© Derive© three-dimensional computer graphing utilities
Introductory linear algebra	Matlab©
Discrete mathematics	Matlab Finitepak© graphing calculators with matrix capabilities (e.g., the Sharp EL-5200)
Differential equations	Mathematica Maple
Statistics	computer statistics analysis software, graphing and scientific calculators with statistics functionality
Abstract algebra	Exploring Small Groups©

Figure 5. Examples of Technology Use in Mathematics Courses

education component of teacher education programs will need to change as well. The two major changes needed are:

- An extended discussion of the effective use of technologies in present secondary school mathematics courses and the curriculum envisioned by the NCTM *Standards*. This discussion must include concrete examples of the ways in which the spectrum of presently available technologies can and should be used.

- An opportunity for students to become thoroughly familiar with presently available technologies that can be effectively used in secondary school mathematics instruction.

If both the mathematics and mathematics preparation of future and secondary mathematics education teachers change to incorporate these recommendations, then I believe that we can optimistically hope that the NCTM *Standards* can be implemented.

> *...departments of mathematics should at the very least set a policy that permits at all times the use of calculators with graphics and symbol manipulation capabilities.*

Summary

Christian Hirsch

From the remarks made here it should be clear that in a very real sense, undergraduate mathematics is the gatekeeper to the fundamental reform of school mathematics recommended in the *Standards*. For proper articulation between new school mathematics programs and colleges, changes must occur in virtually all mathematics courses taken by prospective teachers, not just in specialized content courses. To support the shifts in content emphases proposed for secondary school mathematics, calculus and linear algebra courses must make full use of calculators and computers as integral tools for instruction and for mathematics. As a start, departments of mathematics should at the very least set a policy that permits at all times the use of calculators with graphics and symbol manipulation capabilities. This will compel prerequisites to shift from the present vast array of routine manipulative skills to more integrated problem solving that rewards flexibility, confidence, reasoning, and communication in mathematics.

The content of mathematics programs for teachers will need to be broadened to include the full range of mathematical sciences. For elementary teachers, a single required course devoted almost exclusively to number ideas is insufficient. For secondary school teachers, two years of study devoted almost exclusively to calculus is inappropriate. Most importantly, all prospective teachers must confront ideas in meaningful contexts in which they are actively involved in doing mathematics—exploring, conjecturing, discussing with peers, justifying, applying, and yes, even making mistakes.

Only in this way can they develop an appropriate belief about what constitutes mathematical activity and the confidence so essential to guiding and nurturing youngsters as they solve problems and construct their own mathematical knowledge. With approximately 50 percent of school teachers leaving the profession every seven years (NRC, 1989), significant changes in what and how school mathematics is taught can be made simply by transforming undergraduate mathematics to reflect the new expectations for mathematics. The challenge is yours.

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Commentary on Collaboration in Teacher Education

The preceding section includes papers on teacher education from the perspectives of university mathematics faculty members, a national educational policy organization, and a teacher education scholar. These papers, each in its own way, reflect the near-universal endorsement of the importance of teacher education, and the need to reevaluate standards in this field. Our intent is to share these authors' ideas for ways in which universities and schools could collaborate in this important work.

There are also perspectives that disagree with the thoughtful papers in this section. In the following comments we suggest those other perspectives, not to be simply contrary, but to acknowledge some of the reasons why these authors' good ideas are not already well-established in practice, and to suggest the dimensions of the work that remains to advance university–school collaboration in teacher education.

Edmundson

When we look to Edmundson for promising directions, we find a clear vision of an ideal teacher education program, including the contributions that should come from all faculty members, in direct and indirect support of the teacher education program, and "rewards to faculty who provide exemplary service in the education of educators." This vision (which Goodlad's book presents in more detail) unfortunately ignores the difficulties of realigning institutional priorities and changing institutional culture. It defines "how things should be," not "how we get from here to there."

Universities, of course, should assign a high priority to teacher education, but they could do so only in the context of other significant challenges for advancing knowledge in an era of enormous demand for new knowledge, and preparing their students for scholarly careers in a multitude of fields. We know that K–12 educators have difficulty in adopting new standards and practices while continuing their existing programs; we should acknowledge that university educators have comparable difficulties.

One example of the challenges faced by university educators throughout the country is that of maintaining an appropriate balance between general education and major field requirements…

One example of the challenges faced by university educators throughout the country is that of maintaining an appropriate balance between general education and major field requirements, while providing all students with opportunities to pursue elective studies. Historically, these three components of undergraduate education have warranted equal standing in the student's curriculum.

Today, the "knowledge explosion" in science, mathematics, and engineering creates unrelenting pressures to expand major requirements in these fields, with the consequences of either reducing general education requirements and elective study opportunities or increasing the time a student requires to complete an undergraduate degree—and paying the related institutional costs. (For related discussions, see Association of American Colleges, 1990; Cheney, 1989.) With such challenges on their agendas, the university's academic and budget planners have difficulty in raising the priority for teacher education and in providing prospective teachers with a broad base of knowledge.

Ultimately, this dilemma involves balancing long-term and immediate goals. Universities, businesses and governments, as well as schools, all must address this elusive balance. Their decisions in this arena will define the future.

Rigden

Could the business community help in improving teacher education? Citing Goodlad (1990), Rigden calls upon business leaders to help design more effective general education curricula; make sure teachers know a variety of ways to teach; create a model teacher education program; recruit top-quality students; and link teacher education with school reform.

These initiatives define a comprehensive strategy to strengthen teacher education. While teacher educators might disagree on which specific changes would be most productive, most could agree on the merits of this overall vision.

These initiatives include a variety of roles for business leaders in the education of teachers. These roles range from the familiar (e.g., funding research on teacher education, providing scholarships to future teachers), to the approachable (e.g., supporting campus programs to recruit and graduate more minority teachers), to the challenging (e.g., developing new assessment models). While several of these proposed roles involve essentially "non-intrusive activities"— such as providing funds—Rigden and Goodlad envision much higher levels of involvement by business leaders in teacher education.

We could cite several reasons why this change is unlikely to occur. The most basic reason, perhaps, is the protection of, and the respect for "turf." Teacher educators are generally receptive to the financial resources that businesses could provide, but resistant to proposals to share their decision-making authority with the corporate community. Conversely, business leaders may well be reluctant to impose their perspectives on teacher educators, if only out of their respect for the seemingly esoteric nature of the process of educating young people, and their own enduring struggle to keep government off their collective backs.

Business leaders will need to examine the present conditions of teacher education—and the reasons why those conditions exist—and contemplate ways in which the perspectives of the marketplace might enhance those conditions. For their part, teacher educators will need to open their decision-making processes to the ideas of business leaders, accommodate fundamentally new approaches to their curriculum and teaching practices, and respond to proposed new criteria for assessing the effectiveness of their programs.

Rigden outlines the early steps of establishing a "company program to support teacher education reform": determine the program focus and the kinds of resources that will be committed to the program. Determining the program focus, should—indeed, must—reflect the priorities of the sponsoring institution and the teachers who are responsible for the program. Unless the university's leaders and teacher educators have a clear commitment to strengthening the teacher education program, the best intentions of the business community are likely to result in little more than an occasional grant.

Lindquist, Harvey, and Hirsch

Hirsch, summarizing the presentations by himself and his colleagues, calls upon university mathematics faculty members to permit their students to use calculators with graphic and symbol manipulation capabilities, and—for mathematics programs for prospective teachers—broaden the content and involve students in doing mathematics: "exploring, conjecturing, discussing with peers, justifying, applying, and yes, even making mistakes." Through these changes, these authors assert, university faculty in mathematics could support the NCTM's recommended shift in content emphasis.

When Lindquist et al. urge university mathematics faculty to change their instructional practices, so as to better prepare elementary and secondary teachers to teach mathematics, they assume, seemingly, that university faculty members could change their teaching more easily than K-12 teachers could. This may be an example of wishful thinking.

First, we acknowledge, as these authors probably would, that *some* university mathematics faculty already incorporate today's desirable practices in their courses, and successfully prepare their students—when and if they become teachers—to implement the NCTM's recommended standards for mathematics education. Surely, some very good instructors teach in universities, and some are conversant with the best current thinking about K-12 mathematics education. The university mathematics instructors who participate in the California Academic Partnership Program and the California Mathematics Project exemplify these dedicated educators, as these authors presumably do, as well.

Still, we cannot deny or ignore the reality that some university mathematics faculty members attend more to their research and their graduate students than to their teaching, and extend little effort to update the content of their courses, allow—and encourage—uses of computers and calculators, or engage their students in cooperative learning strategies. In many cases, these faculty provide instruction that could be regarded as excellent, but only according to outdated standards.

Beyond the Handshakes emphasizes university–school collaboration in the professional development of science and mathematics teachers, but the quality of teaching in other disciplines also varies widely. The uneven quality of university teaching results from three principal factors: an emphasis, particularly in research universities, to reward research more than teaching; preparation for teaching; and peer socialization. In the following paragraphs, we briefly examine each of these factors.

Research vs. Teaching. Recent studies (cited by Pister et al. 1991) found that 69 percent of faculty respondents at research universities agreed with the statement, "At my institution we need better ways, besides publications, to evaluate the scholarly performance of the faculty," and that 43 percent of the faculty respondents under 40 years of age agreed that "the pressure to publish reduces the quality of teaching at my university." Pister et al. (1991) also cite a University of California study showing that of 900 faculty members at five UC campuses, 92 percent feel that research is a very high priority, and 38 percent feel that research interferes with teaching. Further, 97 percent rate being a teacher as very important, but only 7 percent stated that UC faculty are rewarded for good teaching.

Preparation for Teaching. University faculty members typically learn about teaching as university students and—sometimes—as teaching assistants. As Lindquist, et al. observe (correctly), each generation of new teachers learns about teaching primarily from university faculty members who in turn learned from their university instructors. This "system" favors continuity—rather than change—in teaching methods and curricular content at both the university and precollege levels.

Peer Socialization. Edmundson cites Goodlad's conclusion that "new teachers face the tyranny of the status quo: 'We've always done it this way,' or 'Welcome to the real world,' or 'Forget all that nonsense they taught you in ed school.' The message is to fit in." New teachers in the university often receive messages about teaching that, although perhaps different in their details, have the same effect. These messages reflect a lack of interest in teaching methods, a lack of time and resources for introducing new approaches, and, in the university, "insider" advice that "this institution rewards research and not teaching."

For example, Wagener (1991) describes genuine advances in mathematics instruction at Harvard University, The University of Chicago, and the University of Indiana at Bloomington, then offers three "cautions":

> Without corresponding changes in incentive and reward systems, teaching practica only go so far in changing student attitudes and values toward teaching. Mathematics students are recruited for their research interests and skills and enroll in doctoral programs in the hope of becoming recognized scholars. The implicit and explicit messages that Ph.D. students get from many faculty reinforce a disinterest in or negative stance toward teaching....
>
> Second, knowledge of subject matter still constitutes the overwhelming core of graduate education today. Professors offering graduate instruction typically forget that the students they teach will soon function as classroom teachers themselves....
>
> Third, few tenured or tenure-track faculty are centrally in-

> volved in apprenticeship programs or practica. This is least obvious at Chicago and most obvious at Indiana. All three universities face the potential problem of creating reliance on a second tier of teaching faculty....

Wagener concludes with a call to "convince more students and faculty that teaching issues are intellectually interesting and integrally tied to thinking about a discipline—that they are worthy of a scholar's attention and deserve the highest rewards. When and if these changes occur, teaching will have achieved the central place it deserves at the university." (p. 37)

This might be discouraging. If university teachers indeed have difficulty adopting newer instructional approaches or updating the content of their curricula, as would appear to be the case, the recommendations of Lindquist et al. will yield little progress.

As always is true, encouraging signs exist. Pister et al. (1991) have encouraged University of California faculty members to discuss the relative importance of research and teaching in that university's faculty reward system. Similarly, Boyer (1990) has stimulated discussion among university administrators and faculty members nationwide with his proposal that the evaluation of faculty performance should encompass the scholarship of discovery (research), the scholarship of integration (synthesis within a discipline, as well as cross-disciplinary studies), the scholarship of application (applied research), and the scholarship of teaching.

Closing Observations

The authors represented in this section advocate improving teacher education by involving nontraditional collaborators: university faculty in disciplines other than teacher education, institutional decision makers, and business leaders. Each of these collaborators has much to offer, and could contribute substantially to the preparation of the next generation of teachers.

In all cases, however, these collaborators have other priorities that command their attention and their resources. They all would prefer to leave this challenge to the teacher educators. Despite their best intentions, the teacher educators cannot accomplish the needed changes without the support of these nontraditional collaborators.

No one said this would be easy. If society wishes to accomplish real change in teacher education, it must be ready to envision new relationships among the key players, and to confront the challenges of making those relationships succeed.

Optimists will insist that we can and will change our priorities, forge these new relationships, and, working together, strengthen the preparation of teachers. Pessimists, on the other hand, will conclude that we can hope for no more than a gradual process of change, requiring so many years of persistent work that these desired new relationships will yield no substantial results for the foreseeable future.

We should distinguish between projections of the future and intentions for the future. Both the optimists and pessimists are entitled to their prognostications, but the core issue is the recognition of the relationship between the preparation of teachers and the achievement of such societal goals as assuring equal educational opportunity for all students and building the nation's capacity to compete economically in the global marketplace. Clearly, for these prospective collaborators to become current collaborators, they must realign their present priorities and adopt a longer-term perspective on their roles in creating the future.

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Professional Development

This section includes a paper by Jane Stallings and Theodore Kowalski on research on professional development schools, and Nancy Adelman's case study of collaborative professional development.

Stallings and Kowalski begin with the *laboratory school,* which they define as "a school located on or near a college campus and administered by the college of education solely or in cooperation with the local school district." After tracing the history of laboratory schools (which began in 1897) and summarizing the largely descriptive research on these schools, the authors list changes that must be made in university priorities if such schools are to achieve John Dewey's 1896 vision of a true educational laboratory.

The authors then consider the *portal school,* defining it as "…a school in a district selected as a point of entry for promising new curricula and practices. It is for new or experienced teachers who wish to improve learning for children." Portal schools existed from 1969 (when the term was introduced) to about 1980, when schools and colleges of education discontinued them, apparently because of a lack of evidence of their effectiveness.

Turning to the present, Stallings and Kowalski see renewed interest in developing closer links between colleges of education and schools. The Carnegie Forum proposed the establishment of *clinical schools*, which would function much like a teaching hospital; the Holmes Group recommended a similar model for the *professional development school*; and a group of Rand researchers proposed the *induction school* model.

The authors report that as of 1988 "such schools were more in the planning stage than a reality," and anticipate that in the 1990s "more of these plans can be expected to become reality and to provide research evidence of their effectiveness." They recommend qualitative and quantitative evaluations of the effectiveness of these schools.

Note: In the interest of brevity, we have omitted capsule descriptions by Stallings and Kowalski of several present-day professional development programs. We encourage the interested reader to read the unabridged version of this paper (see the Stallings and Kowalski paper for the reference).

Adelman's case study examines six collaborative professional development projects, each of which was (and might still be) a member of the College Board's Educational EQuality Project

Models Program. Throughout this study the author refers directly to data collected from these projects as she synthesizes general conclusions regarding the structures, promising practices, and outcomes of collaborative professional development activities.

Adelman first describes three general categories of structures for effective collaborative professional development: dialogues, total immersion, and sustained activity. In the second part of her study, Adelman reports her findings on promising practices in collaborative professional development, emphasizing the importance of the broad front approach, genuine collegiality, and time. Finally, Adelman discusses the outcomes of collaborative professional development. She notes that collaborative projects such as those in the College Board's network are "just beginning to consider the question of formal evaluation of outcomes," and that the participants in such projects are most ready to report on the importance of these projects for them as professional individuals.

Research on Professional Development Schools

Jane A. Stallings and Theodore Kowalski

Professional development schools have existed in many forms since the late nineteenth century. In this chapter, the professional development school is defined as a school setting focused on the professional development of teachers and the development of pedagogy. Laboratory schools embedded in schools of education were the earliest forms of professional development schools. John Dewey (1896) compared the need for a teachers' professional development laboratory to that of scientists and medical practitioners. With accordionlike dimensions, the laboratory school movement has expanded and contracted from that time until today. In the late 1960s and 1970s, professional development schools took the form of portal schools. Portal schools were located within the public school system and focused on developing and field-testing new curriculum, teacher preparation, and inservice education in public school settings. In the 1980s, such schools were called school–college partnerships or professional–practice schools; some have

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Research on professional development schools, by Jane A. Stallings and Theodore Kowalski. Reprinted with permission of Macmillan Publishing Company from *Handbook of Research on Teacher Education*, W. Robert Houston, Editor. Copyright © 1990 by Association of Teacher Education.

originated from school districts and others from colleges of education. This chapter describes the mission and the structure of several efforts to join college and school resources in providing professional development opportunities for educators. Most of the research in this area is descriptive rather than empirical.

Laboratory Schools

As long ago as 1896, John Dewey (p. 422) argued that the teaching laboratory bears the same relation to the work of pedagogy that a laboratory bears to biology and physics. Like any such laboratory, it has two main purposes: first, to exhibit, test, verify, and criticize theoretical statements and principles; second, to add to the sum of facts and principles in its special line.

During the 1980s, Dewey's idea was rekindled, as schools of education sought improvements and more rational solutions to the myriad problems plaguing elementary and secondary education. Once again, the brave dream of a truly experimental school chronicled by Van Til (1969) was being resurrected. The vision was of a school where faculty and master teachers demonstrated their skills in the art and science of teaching, carrying forward research and experimentation with children and youth. Observers and participants would be introduced to the best possible educational theory and practice. In this dream, the development of significant research was a shared responsibility among the faculties of the experimental school and the university.

No aspect of the laboratory school produced higher expectations and more disappointments than the area of research.

No aspect of the laboratory school produced higher expectations and more disappointments than the area of research. In the midst of arguments that teacher education ought to be based upon a body of research (e.g., Berliner, 1985), the potential of campus laboratory schools to contribute to knowledge deserves careful consideration. Presented here is an overview of the history of laboratory schools, findings from the available research, and recommendations for making laboratory schools effective environments for research related to teaching and teacher education. For the purpose of this chapter, the name laboratory school is synonymous with campus school; it is a school located on or near a college campus and administered by the college of education solely or in cooperation with the local school district.

Laboratory Schools' Historical Basis

Two of the more prominent laboratory schools established in this country illuminated research as an essential goal. The Horace Mann School at Teachers College, Columbia University, established in 1887, and the Laboratory School at the University of Chicago, established by John Dewey around the turn of the century, focused upon research activities designed to improve teaching and the experiences of those who were preparing to enter the profession (Page & Page, 1981).

The prominence of these two schools contributed to a broad mission for all laboratory schools. There was a common expectation for research to occur in laboratory schools, and it did through the 1930s. During the war years of the 1940s, there is little evidence that sponsoring institutions provided resources for research. McGeoch (1971), taking a historical perspective, noted that by 1971 experimentation and research were more talked about than practiced in laboratory schools. The two primary purposes she identified were to provide an on-campus environment in which prospective teachers could observe prevailing methods and to provide a setting where student teaching could be completed. Lumpkins and Parker (1986) confirm this, noting that most campus schools continued to serve as convenient sites for pre-student teaching and student teaching experiences. Thus, it appears that 100 years after the inception of the Horace Mann School, those in charge of laboratory school agendas had given up the research mission.

From their beginning in 1887, the number of laboratory schools increased until their peak in 1964, when, according to Kelley (1964), the National Association of Laboratory Schools (NALS) had 212 schools on its roster. This number diminished to 208 by 1969. A more recent report of NALS indicated the number of laboratory schools had dwindled to 95 in 1988. Factors influencing these shifts are reported in the following research studies.

Research on Laboratory Schools

Research about laboratory schools is sparse; however, studies have been conducted periodically to examine their primary functions. One study completed in the early 1940s found that the fundamental use of laboratory schools was almost exclusively for student teaching (Williams, 1942). Another conducted in 1952 established that 85 to 90 percent of 185 campus schools identified observation, participation, demonstration, and student teaching as their major functions. This same study indicated that little more than one-third of the schools even professed to be engaged in any form of research (Rucker, 1952).

Once they had abandoned the research mission and relinquished the preparation of student teachers, the validity of laboratory schools was questioned.

Because the primary purpose of most laboratory schools, historically, was to service teacher education, many educators believed that the schools should duplicate as closely as possible the conditions students would meet in the field (e.g., Harper, 1939). A majority of the schools adhered to this recommendation. As teacher education programs began to swell in enrollment, however, it became necessary to place student teachers in the public schools, as well as in the laboratory schools. Administrators in laboratory schools were slow to react to the implications of this unavoidable decision. If students could complete their student teaching in regular classrooms, was a laboratory school really necessary? And because such great effort had been made to assure that the campus school reflected the real world, was there any substantial difference between the environment of the campus school and the public school? Slowly but surely the public schools became the focus of student teaching and participation (Van Til, 1985). Once they had abandoned the research mission and relinquished the preparation of student teachers, the validity of laboratory schools was questioned.

In 1948, the School and Community Laboratory Experiences Committee of the American Association of Teachers Colleges (AATC) advocated decreasing the emphasis on student teaching in laboratory schools. At the same time, the committee called for laboratory schools to place greater emphasis on experimentation. Student teaching in laboratory schools was reduced, so that laboratory schools served primarily as sites for observation, participation, and curriculum development. The AATC's recommendation that research and experimentation be increased was not followed (Lumpkins & Parker, 1986).

Twenty-two years after the AATC report, Hunter (1970) identified critical problems similar to those cited by the AATC that needed to be addressed by laboratory schools. The first issue examined was an ever-widening gap between findings from research on teaching and the continuing practice in laboratory school classrooms. The second was a critical need for experimental labs to field-test educational innovations. Studies completed in the 1980s revealed that the problems identified by the AATC and Hunter had not been addressed; in fact, laboratory schools were seriously declining, and little research was being conducted.

Jackson (1986) concludes that existing laboratory schools were vulnerable for several reasons. First, although the six commonly stated functions of laboratory schools (educate children, develop innovative practices, conduct research, prepare new teachers, provide inservice practice, and disseminate innovations) are not incompatible, functions considered less important are likely to be inconsistently implemented. Indeed, laboratory school faculties most often have differing beliefs regarding the importance of the six functions; very few place research at the top of their list. For successful operation, laboratory schools need university and school district support. Incongruence in expectations and values has made it difficult to secure the desired level of support. Consequently, laboratory schools have been on the decline since 1969.

To examine the priorities, mission, and motivation of laboratory school faculties, F. M. Page and Page (1981) sent a questionnaire to the 123 schools listed in the 1981–1982 National Association of Laboratory Schools Directory. Fifty-seven schools responded. Based upon this input, the following conclusions were drawn.

- Increased costs in higher education are a contributing factor to the closing of laboratory schools.
- Many laboratory schools are attempting to broaden their missions and to maximize support for operations.
- There is some indication that research is gaining in importance, but it is not viewed as a primary function.
- Promotion, tenure, and continued employment appear to be the greatest extrinsic motivators with regard to laboratory school faculties conducting research.

- Faculty in laboratory schools have limited time to conduct research.

In a follow-up study, Page (1983) found that laboratory school faculty reported spending as much as 13.7 percent of the time in research-related activities. This is equal to the amount of time reported by faculty in research-focused colleges of education. In a survey of college of education professors, Ducharme (1987) found time spent in research differed according to the type of institution. He found that, on the basis of a typical 44-hour week, professors in small 4-year colleges reported spending 4 hours per week on research. In big state colleges offering the master's degree, professors spent 5 hours a week. In research-focused institutions offering the doctorate, professors reported spending 6 hours a week (14 percent of their time) on research activities.

Employing the same list of laboratory schools used by Page and Page in 1981, Kowalski, Glover, and Krug (1988) surveyed the 95 remaining laboratory schools regarding their research activities. Their sample reported use of only 3 percent of the time on research activities. This is approximately 10 percent less time spent on research than that reported by Page in 1983. The classification for time utilization was not identical, and these differences could explain the variance in the findings for the two studies. In the Kowalski et al. 1988 study, those few institutions reporting research activity described the foci of their research efforts as follows: teaching methods—35 percent; curriculum—18 percent; teacher education—9 percent; learning/development—35 percent; other—31 percent.

Although laboratory schools have been conceptualized as special environments in which the joining of theory and practice can be explored, 61 percent of the schools surveyed reported little or no collaboration between college and laboratory school faculties (Kowalski et al. 1988).

Unlike previous survey studies, Kowalski et al. also conducted a database search (*Psychological Abstracts* and ERIC for 1986) in an attempt to verify the level of laboratory school activity related to research. This search identified 168 journal articles, convention papers, and occasional papers authored by individuals affiliated with laboratory schools in the United States. When convention papers (the majority given at state and regional meetings) and articles in the *National Association of Laboratory Schools Journal* were subtracted from this total, only 32 remained. Of the 32 articles, only one had appeared in a journal sponsored by the American Educational Research Association, the American Psychological Association, or the American Association of Colleges for Teacher Education. These results support the conclusion that laboratory schools and their faculties, in general, have contributed very little to the development of theory in the field of teacher education.

The Future of Laboratory Schools

The national attention accorded to education in the 1980s presented a rare opportunity for laboratory schools to achieve what Van Til (1985) describes as Dewey's dream of a laboratory school that is truly a laboratory. If laboratory schools are to become that dream, priorities must change. *First,* university and laboratory school faculties must make a philosophical commitment to collaborate in developing a research mission for the laboratory school. For example, models to develop teachers who are reflective about the teaching-learning process are desperately needed. Models are needed for developing teachers who can teach with sensitivity and knowledge the 55 percent-multicultured nation of children predicted for the twenty-first century. To develop new models and to conduct controlled experiments of their effects, research-oriented faculty needed to be recruited to work with or in laboratory schools. Faculty working in laboratory schools also need cooperative working skills, so that the needs and attributes of participants are recognized and growth opportunities are supported.

. . . models to develop teachers who are reflective about the teaching-learning process are desperately needed.

Second, the agenda of the laboratory school should be to ask and answer important educational questions. Research-and-development efforts should result in visible products of value to elementary and secondary schools, as well as to teacher education programs. The research-and-development activities should address the needs specified by stakeholders in the laboratory school community, including the service commitments of the university and college of education.

Third, incentives for working in laboratory schools need to be clearly delineated. Nielsen (1986) states that, if the desired changes in laboratory schools are to come about, instructors recruited for campus schools must have full university faculty status including rank, access to tenure, sabbaticals, and related professorial roles. Research by Page and Page (1981) indicates that, if laboratory schools are to prosper, the administration must systematically illuminate and reward research efforts that occur within the laboratory schools. The infusion of adequate fiscal resources permitting appropriate teaching loads for those engaging in research is also required. It is unrealistic to expect faculty to assume teaching loads similar to those in the public schools and to simultaneously perform research activities.

> *. . . if laboratory schools are to prosper, the administration must systematically illuminate and reward research efforts that occur within the laboratory schools.*

Other fiscal considerations must include the support necessary to sustain research efforts. Support must include material, equipment (e.g., computers), travel monies, and reimbursement for publication costs. Research support, however, also includes human resources (e.g., secretaries, graduate assistants, aides) that allow laboratory school faculty the time to do research.

Effective research in teacher education cannot be done in a vacuum. It needs to occur in settings where there are real children, real adults, and effective teaching (Van Til, 1985). Research models must be validated with real classroom events and produce studies useful to practitioners in education (Ornstein, 1985). The achievement of realistic research goals, therefore, is most probable in an environment where classroom teachers also become researchers. Those who control university and public school budgets must be convinced that experimentation and applied research are important to teacher education and that the laboratory school is a feasible environment for conducting such activities.

Portal Schools

The label of *portal school* appeared first in the literature describing the teacher education process in the *Florida State University Model for the Preparation of Elementary School Teachers* as described by Sowards (1969). The portal school is broadly described by its name.

"It is a school in a district selected as a point of entry for promising new curricula and practices. It is for new or experienced teachers who wish to improve learning for children." (Chambers & Olmstead, 1971, p. 2)

To provide a sense of history, early in 1970 President Nixon addressed the crisis in education (as have succeeding presidents):

> There comes a time in any learning process that calls for reassessment and reinforcement. It calls for new directions in our methods of teaching and new understanding of our ways of learning, for fresh emphasis on our basic research. We must improve education in those areas of life outside the school where people learn so much or so little. (Bradley, 1971, p. l)

Although Bradley mentions the shortage of teachers in the 1950s and 1960s, the more profound problem then, as now, was the quality of education:

> While there are more teachers now, little has been done to change the way in which they are prepared. especially for the inner-city public schools. New teachers are graduated who lack field experience. Inservice training is limited and university teacher trainers are isolated from the public schools in which they are preparing their students to teach. (p. 2)

These words have a familiar ring; the problems of educating teachers in the 1970s sound similar to problems identified in the late 1980s, with, possibly, similar solutions being proposed.

The portal school concept provided for a process of self-renewal to take place within the school system....

The portal schools grew out of the perceived need for improving the quality of education at all levels. The portal school concept provided for a process of self-renewal to take place within the school system, so that the education of teachers and children would become more relevant to the world in which they lived. The concept was designed to orchestrate the discrete elements of public school education (universities, public school administrators, teachers, professional organizations, and the community). A unified educational focus was expected to improve the total learning environment and build the process for self-renewal into the system itself. Joyce (1972) wrote:

> Massive infusion of funds into the educational system can do little to change it unless teachers become agents of change. Teacher education must be rooted in commitment to educational change. Young teachers need to be prepared—not by socializing them to the existing pattern of the school—but by preparing them to participate in the recreation of educational forms and substance. (p. 10)

The portal schools were regular schools in a district selected as a point of entry for promising new curricula and practices. It was for new or experienced teachers who wished to improve learning for children. According to Chambers and Olmstead (1971), the portal school served as a focal point for interaction with the university in specifying those teaching competencies needed to create and sustain innovative practices that had proven to be effective. The portal school was a dissemination point or point of exit into other schools in the district for tested curricula and for teams of retrained teaching personnel.

The portal schools were regular schools in a district selected as a point of entry for promising new curricula and practices. It was for new or experienced teachers who wished to improve learning for children.

Considerable support for the portal school idea came from the Council of the Great City Schools. The council was committed to a need for systematic change, new curricula in the schools, relevant teacher education, and relevant inservice education. Portal school models were developed at Florida State University, Temple University and the Philadelphia Public Schools, University of Georgia and the Atlanta Public Schools, and the Wisconsin Research and Development Center. Teacher Corps and the American Federation of Teachers also embraced the portal school concept. Through Teacher Corps grants, there was some federal funding for portal school network activities.

Although each model was different in its response to the needs of the community in which it was located, there were elements common to portal schools, including:

- An advisory council established at the beginning with representatives from each group (i.e., teachers' bargaining agent, students

> in preservice training, administration, community, university). This council acted in an advisory capacity to the building principal, who retained chief administrative responsibility.
>
> - Selection of portal schools made with firm support from the teachers and administrators in the schools, as well as the top administrations of the university and school system.
> - Planning time provided for developing projected goals and for designing programs to meet those goals. This planning involved teachers, union, community, college faculty, and school system staff from the beginning.
> - Agreements made among the schools, colleges, state departments of education, community, and teachers for the administration, evaluation, and revision of education programs. (Lutonsky, 1972a, p. 8)

Existing university and school system programs for pre- and in-service training and curriculum development were concentrated in portal schools. With enough programs per building, the university was able to justify financing a full-time professor per school to assist in the development and coordination of portal school programs. These programs provided more professional staff per school, resulting in more programs for pupils. This staff was available for a variety of consultative, testing, workshop, staff, program development, and material construction purposes at no additional cost to the school.

Each group recognized that this concept relied upon equal sharing of responsibility for the development of portal school programs. A written agreement was drawn up and signed by all cooperating agencies and was effective for at least three years; one year for planning and development and two years for implementation.

Competency-based educational learning experiences were available in portal schools so that (a) future teachers could develop and demonstrate professional skills in the field, (b) their professors could return to the field to test and refine their expertise, and (c) both professors and coordinating teachers could assess students' professional growth and the effectiveness of curricula and instructional skills in a real-life context.

It was the interaction of these processes that defined the uniqueness of a portal school and served as a strategy for self-renewal (Lutonsky, 1972a, p. 11). Although the mission, essential elements, objectives, and implementation stages of the portal schools were clearly defined in their monthly newsletters (Lutonsky, 1972b), evaluation or systematic assessment of the program or projects was not mentioned in any of the portal school literature. Innovators of portal schools seemingly did not design research to see whether objectives were met. Research methodology to assess expected or unexpected changes in teacher education or student outcomes was not included in their plans. Perhaps the lack of information regarding the effectiveness of the portal schools led to their lack of funding and subsequent demise. By 1980 the portal school terminology had dropped from the literature, and schools and colleges of education were once again isolated in their attempts to improve teacher education.

Perhaps the lack of information regarding the effectiveness of the portal schools led to their lack of funding and subsequent demise.

Current Reform Efforts in Professional Development Schools

The plummeting test scores of students in the 1970s were dramatically presented to the American people through the popular press. Not only did the achievement test scores of the traditionally lower achieving segments of the population drop, but also the college-bound students were mastering less in academic subjects than their counterparts in previous decades. These events brought components of the education system under close scrutiny. Congress and private foundations commissioned assessments of our nation's educational system. Forthcoming were arousing, quotable indictments such as the opening words in *A Nation At Risk* by the National Commission on Excellence in Education (1983): "If an unfriendly foreign power had attempted to impose on America the mediocre educational performance that exists today, we might well have viewed it as an act of war" (p. 5). In John Goodlad's book, *A Place Called School* (1984), the first sentence reads, "American schools are in trouble." In his book *High School: A Report on Secondary Education in America*, Ernest Boyer (1983) added his voice to the battle cry for educational change. The effect of these reports was to propel stakeholders in education to a frenzied examination of the goals and conditions of schools in their own locales. The subsequent education reform movement in the 1980s created state and local commissions of excellence that have functioned to recommend legislation and mandate change in school curricula, graduation standards, teacher certification, and teacher assessment.

After the first wave of responses to the challenge for excellence, a more in-depth analysis identified goals for schools that were much broader than gains on achievement test scores. The leaders of business and industry declared a need for employees who had basic skills but who were flexible learners who could transfer knowledge from one task to another. They needed employees who were responsible, who had high work standards, and who had the social skills necessary for cooperative tasks. With rapidly exploding information and technology, workers in the 1990s and the twenty-first century are likely to change occupations three or four times during their lives. Given the expected changes, employees will need learning to learn skills. Such outcomes of schooling require a different structure of schools and classroom instruction. To develop the type of citizenry required for the twenty-first century, schools must be different, principals must be different, teachers must be different, and colleges of education must be different.

The leaders of business and industry declared a need for employees who had basic skills but who were flexible learners who could transfer knowledge from one task to another.

Two major reports have driven the reconceptualization of teacher education toward a model of professional–school partnerships linking colleges of education and schools. These are the Carnegie Forum's report and the Holmes Group report.

The Carnegie Forum on Education and the Economy (1986) recommended the development of a National Board for Professional Teaching Standards. This board would have created a set of assessments of teachers' subject-matter knowledge, pedagogical understandings, and application of this knowledge in simulated classrooms. Specifying a high standard of professionalism in teaching would enhance the prestige of the occupation and would enable the recruitment of more academically able candidates. To prepare teachers to meet these standards, the Carnegie Task Force recommended the establishment of *clinical schools*. Clinical schools would link faculties in elementary and secondary schools, colleges of education, and colleges of arts and science to provide the best possible learning environment for teacher preparation. The forum recommended a two-year graduate course, the first year spent in coursework and internship, the second year in residency, working under supervision in a *clinical school*. The clinical school was seen as analogous to a teaching hospital. This design called for teachers in outstanding public schools to work closely with colleges of education in the clinical school. *Lead teachers* would hold adjunct appointments at the university. They would serve on the instructional staff of the Masters in Teaching Degree Program. Participants in this partnership would have opportunities to reflect upon teaching and learning within the clinical school environment. "The clinical schools should exemplify the collegial, performance-oriented environment that newly certified teachers should be prepared to establish." (Carnegie Forum on Education and the Economy, 1986, p. 77)

Professional development schools are described in the Holmes Group report (1986) as institutions that would connect colleges of education with schools in a manner similar to that described by the Carnegie Forum report. The Holmes Group report also recommended that professional development schools be analogous to teaching hospitals in the medical profession. The partnership among practicing teachers, administrators, and university faculty would be based on the following principles: (a) reciprocity, or mutual exchange and benefit, between research and practice; (b) experimentation, or willingness to try new forms of practice and structure; (c) systematic inquiry, or the requirement that new ideas be subject to careful study and validation; and (d) student diversity, or commitment to the development of teaching strategies for a broad range of children with different backgrounds, abilities, and learning styles.

These schools would serve as settings for teaching professionals to test different instructional arrangements for novice teachers and for researchers to work under the guidance of gifted practitioners, for the exchange of professional knowledge between university faculty and practitioners, and for the development of new structures designed around the demands of a new profession (Holmes Group, 1986, p. 67).

Another term for professional development schools was used by Wise et al. (1987) in the Rand study. They promoted the idea of an *induction school.* Although Wise et al. believed that universities should provide a sound knowledge base, they also believed that a teacher can become fully prepared only through extensive, supervised, classroom experience. In the induction school, new teachers would be supervised frequently by expert teachers. Recognizing the difficulty of recruiting and keeping good teachers in inner-city schools, the Rand study recommended that the induction school be located in an inner-city neighborhood. The rationale for this proposal was that senior tenured teachers would be more likely to stay in such schools, given the benefits and chances to advance through opportunities to serve as expert teacher trainers. Heavy staffing to allow frequent supervision of the novice teachers would be a key feature of this program. Expected benefits include (a) supervision for beginning teachers with eased entry to teaching, better preparation for teaching, and reduced attrition; (b) an attractive assignment for senior teachers that recognizes and uses their talent and experience; (c) a setting where first-year teachers could be efficiently and effectively evaluated; and (d) more resources and more stable teaching for disadvantaged children (Wise et al. 1987, p. 96).

Although differing somewhat in conceptualization, the goals of the professional development schools described are similar. Each recommends partnerships that join teachers, administrators, and college faculties in an effort to restructure the preparation and the induction of teachers into the teaching profession. The goal of this collaborative effort is to develop schools and colleges where participants will acquire essential (a) subject-area knowledge; (b) reflective, analytic, problem-solving skills; and (c) social skills, so that the educational needs of society now and in the twenty-first century are met. The resultant structure of such consortiums is schools where administrators, teachers, student teachers, and college faculty can grow professionally.

Although these reports have conceptualized specific types of professional development schools requiring extensive restructuring of schools and colleges, in 1988 such schools were more in the planning stage than a reality. There were many forms of school–college partnerships and a few experiments whose purpose was to explore the possibilities of professional development schools in a wide range of contexts. Two fairly recent directories of school–college partnerships, both authored by Wilbur, Lambert, and Young (1987, 1988), describe partnerships in the form of institutes, academies, academic alliances, residencies, and induction teams.

Conclusion

In the summer of 1988 many promising plans for professional development schools originated from school–college partnerships. Some emanated from school districts, others from colleges of education. Several grant request proposals to the federal government and private foundations focused on the development of such schools. During the 1990s more of these plans can be expected to become reality and to provide research evidence of their effectiveness. Longitudinal evaluations of several models of preparation are needed to study the long-range effects upon teacher placement and retention. Findings from research projects in the Maryland Teacher Education Centers and from the University of Wisconsin at Whitewater and preliminary findings from the Houston Teaching Academy suggest that experiments are badly needed to examine differences in effect of professional development schools on undergraduate, graduate, elementary, and secondary preparation and credentialing before undergraduate programs are too hastily eliminated. Also needed are experiments in several models of preparing and inducting teachers through professional development schools. These experiments must report the longitudinal impact of teacher-preparation models on teachers and students. In lieu of substantive research findings, teacher-preparation and certification policies are being made by state legislatures on the basis of passionately held philosophical beliefs and guesses.

Review of the literature on professional development schools suggests that the laboratory schools became too far removed from the mainstream of school life to be credible, and the portal schools spent too much time designing elaborate relationships between schools and colleges that never really got started before their window of opportunity closed. The designers of laboratory and portal schools paid little attention to evaluation or to reporting the effects of their efforts upon teachers or students; thus, little but rhetoric remains to indicate their value. In the 1980s there were many conceptualizations of professional development schools, and, at the time of this writing, only a few have been implemented. Only three could be found to have collected systematic qualitative and/or quantitative baseline data, so that they could estimate changes resulting from model intervention. Such evaluations must be planned and carried out if there is to develop a body of knowledge about teacher preparation through professional development schools.

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Collaborative Professional Development: A Case Study on Teacher Professional Development Through School–College Collaboration

Nancy E. Adelman

Summary

Teacher professional development surely ranks high on any list of often discussed topics relevant to school reform. Yet at least one aspect—professional development carried out collaboratively with high school and college teachers—remains relatively unexplored. As the College Board's Educational EQuality Project Models Program for School–College Collaboration has matured, collaborative professional development has emerged as a common area of work among many of the network's members. In 1987 the Office of Academic Affairs (OAA) commissioned this study of professional development activities under way among network members in order to capture and highlight promising practices of the EQ Models in this particular area.

The study focuses on six network members: the Atlanta Public Schools with the National Faculty, the Milwaukee Public Schools/

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University of Wisconsin–Milwaukee, the Greater Boston Foreign Language Collaborative, Pennsylvania's Commonwealth Partnership, the Yale–New Haven Teachers Institute, and Project STEP (the Santa Ana Unified School District, the University of California at Irvine, Rancho Santiago Community College, California State University at Fullerton, and Chapman College). Other collaboratives are discussed to a lesser extent (Colorado's PROJECT LINK, for example).

Sources of information for the study were written materials (published and unpublished), interviews with EQ Models representatives actively involved in planning and conducting the activities, and interviews with some participants in the professional development activities. Site visits provided primary information concerning the Milwaukee, Atlanta, and Boston collaboratives.

Considered in the first section of the study are three structures for effective collaborative professional development. Most of the collaboratives described had conducted local teacher dialogues for secondary and postsecondary teachers based on the academic subjects and competencies discussed in the College Board's Academic Preparation Series. The dialogues proved to be effective forums for professional exchange between school and college teachers and, in some cases, a workable strategy for translating partnership agreements among institutions into stimulating professional relationships among individuals.

The residential professional development program, called the total immersion approach, is the second structure discussed. The summer institutes of two collaboratives (Atlanta and Pennsylvania) are described in some detail. While both are regarded as generally successful, the study explores the pros and cons of each residential program, and the discussion includes a sample of participants' observations about the relative effectiveness of several aspects of the activities.

A general category of sustained collaborative activity is the third structure described. The category includes professional development designed to address a particular theme over a period of time (weeks or months). The differences among the three programs summarized illustrate how continuing professional development activities are adapted to the differing circumstances, resources, and perceived needs of school–college partnerships.

Promising practices in collaborative professional development are reported in the second section of the study. The experiences of EQ Models Program members are used to emphasize three points. Using the case study of one high school in Milwaukee targeted for revitalization through collaboration with the University of Wisconsin–Milwaukee, the report suggests that a creative combination of professional development activities (called the broad front approach) is an essential component of an effective school renewal effort. The importance of genuine collegiality among high school and college teachers is the second point emphasized. Third, the importance of adequate time to plan and organize collaborative activities as well as to participate in them is addressed. Discussion of this point includes examples to illustrate how time commitments can enhance or impede the progress of collaborative professional development efforts.

The study then turns, in the third section, to a discussion of the outcomes of collaborative professional development from the perspectives of practitioners and outside observers. During interviews about their experiences, both high school and college teachers focused on personal intellectual growth and renewal as outcomes. The appropriateness of such outcomes for collaborative professional development is briefly considered. The report cites examples of the long-term impact of these collaborative activities on teachers' attitudes and behaviors and also considers some institutional effects such as changes in teacher training and induction practices.

During interviews about their experiences, both high school and college teachers focused on personal intellectual growth and renewal as outcomes.

The study concludes with observations about the value of collaborative professional development both as a means of improving educational quality and equality and as a legitimate end in itself.

Introduction

Since 1983 the College Board's Educational EQuality Project has fostered a network of high school–college collaborative projects. Located at 18 sites around the nation, the network members come together twice a year to share and discuss common concerns and interests. By design, no two projects are configured in precisely the same way, nor do they all engage in the same types of activities. Each project, however, (1) involves schools and institutions of higher education and (2) has a unified focus on quality and equality in education and a special interest in preparing more students for college entrance, particularly students from groups that have traditionally had lower rates of college attendance. In addition, a substantial number of projects have chosen professional development activities that bring school and college faculties together as a vehicle for collaboration. What follows is a descriptive case study of those activities—past, present, and planned.

We begin by asking, "What is professional development?" Certainly the phrase has a wide range of definitions. Formal graduate school courses for credit provide it, as do workshops and seminars of all kinds, sabbaticals, trips abroad, and mentoring relationships between individuals. Increasingly, summer work experiences in the private sector are being added to the list of legitimate professional development activities, particularly for teachers of mathematics and science. The content of these ventures may be discipline-based and related to a specific teaching field, or it may be generically associated with the act or process of teaching. Motivations for participating in any of these professional development activities are likely to vary: state or local requirements for certification or recertification, genuine interest, personal renewal, forced attendance, or a combination of the above.

Like "ordinary" professional development, "collaborative" professional development may be described by any of these motivational characteristics as well. It differs in that, by definition, it must include a sharing of whatever activities are involved by school and higher education teachers. This implies a relationship above and beyond individual enrollments in regularly scheduled courses in graduate schools of education. The collaborative activities are special outreach efforts designed to facilitate a mutual understanding of school problems coupled with a mutual commitment to finding solutions. Where these activities involve an infusion of new ideas or of new approaches to teaching, they can be defined as collaborative professional development.

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This examination of the operations of collaborative ventures does not dwell on factors that the literature of collaboration has by now established as essential to initiating a partnership between higher education and the schools (that is, support of top administrators, agreement on mutual goals, realistic time frames). Rather, it focuses on structures, strategies, and strengths that have proved successful in implementing collaborative professional development activities for members of the College Board's network—the EQ Models Program—and on problems and pitfalls to be overcome. The reader should note that many of the approaches described can and do support other kinds of collaborative activity—for example, curriculum development and delivery, home–school–college communications, and improved guidance services. Some collaboratives are, in fact, addressing all these areas (and more) simultaneously.

The bulk of the description in this case study is based on six collaborative projects: the Atlanta Public Schools with the National Faculty, the Milwaukee Public Schools/University of Wisconsin–Milwaukee, the Greater Boston Foreign Language Collaborative, Pennsylvania's Commonwealth Partnership, the Yale–New Haven Teachers Institute, and Project STEP (the Santa Ana Unified School District, the University of California at Irvine, Rancho Santiago Community College, California State University at Fullerton, and Chapman College). Other collaboratives, about which more limited information was available, are referred to in some sections.

The primary sources of information for this study were written materials about professional development activities in the EQ Models (published and unpublished), interviews with representatives to the College Board network actively involved in planning and conducting the activities, and interviews with participants in several professional development institutes. Because of time constraints, site visits were made to only three locations (Atlanta, Milwaukee, and Boston).

The study mainly examines collaborative activities as they happened to exist across the network in 1987. Although it might also be instructive to examine the processes that set these collaborative professional development programs in motion, this study was undertaken to derive information about what was in place in 1987.

Structures for Collaborative Professional Development

Collaboratives organize professional development activities in a multitude of ways. Within this particular group of collaboratives, however, some standard strategies emerge. For example, with College Board encouragement and support, most of the collaboratives described in this case study have organized and implemented local dialogues between secondary school and college teachers on specific issues drawn from the College Board's *Academic Preparation for College: What Students Need to Know and Be Able to Do* and Academic Preparation Series.[1] On their own initiatives, the collaboratives engage in many types of interpersonal and interinstitutional exchanges, ranging from informal one-on-one relationships between individuals to more typical scheduled events such as workshop and committee meetings. Some collaboratives schedule professional development activities during school hours; others sponsor gatherings after school or on Saturdays. Several hold their most ambitious and sustained events during the summer. The following is a representative (although not necessarily exhaustive) typology of structures for collaborative professional development in the EQ Models studied. The specific collaborative projects described are examples of each type identified. Other collaboratives in the network may use these strategies as well.

The Dialogues

Dialogues, in the context of the Educational EQuality Project and its Models Program, provide opportunities for local high school and college teachers (as well as other members of the community influential in education) to come together for discussion of approaches to improving all students' academic preparation for college. Generally speaking, dialogues tend to be subject-matter-specific colloquiums, providing, for example, English, mathematics, or science teachers at the secondary and postsecondary levels of education an opportunity to discuss curriculums and teaching strategies that are of mutual interest. Most of the 18 collaboratives in the network have hosted at least one dialogue, following guidelines set by the College Board.[2] In general, dialogues have been half-day sessions involving 30 or more persons. The College Board has provided publications (the six books in the Academic Preparation Series) as a basis for discussion, planning assistance, speakers or other resource facilitators, and modest financial support for expenses.

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[1] (New York: College Entrance Examination Board, 1983.) The six books in the Academic Preparation Series—one in each of the six Basic Academic Subjects—provide suggestions for a comprehensive reconsideration of high school curriculum and instruction. They also clarify how education equity is an integral component of educational excellence.

The format for the dialogues has been fairly standard among the collaboratives: opening or keynote speeches, concurrent discussion groups (either discipline-based or interdisciplinary), reports back to the larger group, and a wrap-up session. The principal expenses include food, College Board and other publications for distribution, and miscellaneous supplies. If a dialogue is held on a school day, any registration fees and the cost of release time for participating secondary teachers are covered by the school districts. Some institutions of higher education have also provided registration "scholarships" for the secondary teachers as well as for participating graduate students.

Most of the dialogues examined for this case study took place on a college campus. Perhaps this is because college facilities accommodate a conference better than does the typical high school. In general, secondary school teachers are probably more accustomed to attending events held on college campuses than college teachers are to attending those held in schools. However, one group—the Greater Boston Foreign Language Collaborative—recently held its second dialogue at Newton South High School and was gratified to find that attendance remained high, with a good balance between secondary and postsecondary participants.

Dialogues have varied in size and elaborateness. Most have drawn on the College Board's contacts and resources to obtain speakers or facilitators for dialogue sessions. Depending on the time of day when a dialogue was held, continental breakfasts and buffet lunches or suppers have fortified the participants. In at least two instances, however, dialogues included somewhat more formal meals as part of the day's activities. For example, Project STEP in California provided a sit-down lunch for 80 persons, with a pianist playing baroque music. A trivial distinction? Perhaps, but according to one dialogue organizer, aside from the professional opportunity for academic exchange, this special touch generated more unsolicited comments than did any other aspect of the day. Said one participant, "It was so nice to be treated as a professional."

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[2] In 1985-86 nearly 1,000 educators joined in 15 separate local dialogues hosted by the collaboratives in their own areas. Eight additional dialogues, some follow-up, were held in the spring and summer of 1987.

In the spring of 1986 the Yale–New Haven Teachers Institute sponsored a dialogue on preparing students for college and for the world of work. Compared with others, this event was somewhat more elaborate, involving several visiting dignitaries, a reception, a dinner, and an after-dinner speaker. While the format of the dialogue and the substance of the joint academic discussions were remarkably similar to those held elsewhere around the country, the tone and the attention to detail associated with the Yale–New Haven dialogue—like the one in California—made a statement about the importance of the occasion that was not lost on the participants.

. . . the dialogues have been an important element in their efforts to formalize communication between school systems and higher education, particularly on academic matters.

For one of the collaboratives in this sample (Atlanta) and similarly for others in the EQ Models Program, the dialogues have been an important element in their efforts to formalize communication between school systems and higher education, particularly on academic matters. Individual dialogues have led to numerous subsequent collaborative activities—additional and wider ranging dialogues, formal district workshops, joint research projects, or simply person-to-person communications. In some cases they have been seized as ready-made constructs that save thought and energy at the local level. In others (for example, the Yale–New Haven Teachers Institute, Project STEP, and Wisconsin) they have been adjuncts, or addenda, to already well-established activities. Either way, they have been useful in extending the level of contact and in providing for secondary and postsecondary teachers a seldom-found professional opportunity for subject-matter exchange.

The Total Immersion

One approach to collaborative professional development brings high school and college teachers together in an intensive period of living and working together, usually on a college campus. While this total immersion approach to professional development has the potential for a high payoff, the success of such intensive programs is fragile and problematic, requiring a great deal of planning. In many ways a residential professional development program is not unlike a summer camp experience: plenty of interesting things to do offset tendencies toward homesickness, boredom, or the unfortunate chemistry of a mismatched cabin group.

Perhaps the classic examples of successful residential collaborative professional development are the workshops sponsored by the National Science Foundation (NSF), beginning in the 1960s. Whether or not one believes that the schools were well served by government-funded, higher-education-developed mathematics and science curriculums, the fact is that for many teachers the NSF summer workshops have been a highlight of their teaching careers. Teachers continue to talk about them and the unique opportunity to work as scientists in superbly equipped facilities, sometimes under the mentorship of world-famous biologists, physicists, and mathematicians. Two of the EQ Models Program collaboratives—the Atlanta Public Schools with the National Faculty and Pennsylvania's Commonwealth Partnership—have sponsored residential summer workshops or institutes that bring school and college faculties together day and night on a college campus for about two weeks.

Atlanta Public Schools with the National Faculty Summer Institute

Beginning in 1985 Atlanta's summer institute was held on the campus of the University of the South in Sewanee, Tennessee. For an understanding of the structure of the summer program, background on the general nature of the collaborative is helpful. The National Faculty (NF) is an organization—supported by multiple foundations, corporations, and school systems—that identifies, and enlists the assistance of, outstanding college teachers who will engage in professional development activities with high school teachers. Originally focused exclusively on humanities disciplines, the NF expanded to include science and mathematics teachers and in 1987 had about 300 college teachers on its roster. In general, a professional development contract with a team of NF teachers must be a two- or three-year commitment and involves school-year workshops as well as a summer institute.[3] Many of the teachers on the NF team are drawn from colleges and universities in Atlanta and also from other colleges in Georgia.

From 1983 to 1987, the Atlanta Public Schools and the National Faculty collaborated in a comprehensive inservice education program to enhance the quality of humanities education in Atlanta's high schools. Because the collaborative's goal was to strengthen teaching and learning, its staff development program focused both on increasing teachers' knowledge of their subject matter and on effective pedagogy.

Teachers had remarked that although the institutes were stimulating and they welcomed the intellectual challenges presented to them, it was difficult to apply what they had learned to a classroom setting.

In June 1987 the Atlanta Humanities Program held its third summer institute on a mountaintop in Sewanee, Tennessee, at the University of the South. For many of the participants, college and high school teachers alike, the institute was old home week. They were veterans of one summer and sometimes two previous summers in Sewanee, and they knew more or less what to expect.

A new component was added to the 1987 institute in an effort to respond to teacher evaluations of the preceding two summer programs. Teachers had remarked that although the institutes were stimulating and they welcomed the intellectual challenges presented to them, it was difficult to apply what they had learned to a classroom setting. Therefore, the 1987 institute was designed to include a group of students—both to give the students an enrichment experience and to enable the teachers to practice teaching new material or to experiment with new ways of teaching familiar material. The National Faculty was somewhat reluctant to modify the institute in this way, but the Atlanta Public Schools representatives prevailed, observing that positive teacher outcomes were not sufficient to justify support for this kind of collaborative professional development program at the secondary level. A programmatic means must also be found to relate teacher outcomes to student learning. This experiment with format and participants proved a source of tension as the institute progressed; the situation is discussed below.

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[3] Over a 20-year period, the National Faculty has conducted 600 programs with school districts in 20 states.

Days at the collaborative's humanities institute were full. The college teachers arrived a day in advance for last-minute planning and discussion. Initial planning for an institute actually begins in the winter and is both thorough and extensive. Because this was the third institute in a series, this group of professors was already acclimated and comfortable with one another. Longitudinally, turnover among the college teachers has been minimal—one or two per year. Over time, strong friendships form among team members, and there is intimate knowledge of each individual's academic interests and teaching styles. Planning for an institute involves identification of ways in which these interests and styles can mesh into a coherent and sustained professional development experience for Atlanta's teachers of English, history, foreign languages, and the arts.

The theme of the third institute was culture and counterculture, with a particular emphasis on the minority impact on, and experience of, cultural revolution. The typical morning was organized around a plenary session, followed by small-group interdisciplinary writing sessions. After lunch, teachers met in groups determined by their subject area and the geographic area of Atlanta in which they teach. Late in the day, participants recombined into color-coded interdisciplinary teaching groups, where actual lessons were prepared. Two or three times during the two weeks, whole-group activities were scheduled in the early evening—films or picnics, for example. In general, however, evenings were reserved for homework and socializing.

This is a very full format but one that has proved workable. In truth, Sewanee is an isolated (and very beautiful) spot; there are not many distractions or opportunities for extracurricular activities. The institute is pretty much the whole ball game.

What are these activities expected to accomplish? Professional development seems to operate on several levels at the humanities institute. The plenary sessions are intended to stimulate ideas, pose questions, and set the stage for the other types of activities. They are the theater for the National Faculty members, where, in turn, the members demonstrate their enthusiasm for the concept of humanities. It is notable that while other segments of the day acknowledge the realities of departmentalized teaching—the English teacher teaches English, the history teacher teaches history, and never the twain shall meet—the plenary sessions are not bound by disciplinary lines. For example, a Canadian professor of history used art slides and his considerable knowledge of philosophy to depict the Romantic Movement as a counterculture to the "canon" of the day. In a moving and unplanned detour from the script, a professor of foreign languages became living history as he described his personal experience of oppression in a Latin American country. For many participants these sessions were the highlight of the institute experience.

Discussion and written reflection on the plenary sessions occurred in small interdisciplinary groups led by NF team members. Observers were welcome only if they played by the ground rules of the session—that is, everyone must write something and share it. There was no set agenda for the content of the writing sessions. Topics emerged organically from the plenary session. On the last day of the institute, for example, a question was raised about how non-black teachers can effectively use black literature in the classroom. The leaders of one writing session broadened the scope of the issue to include the use of any controversial material in the classroom—the Bible as literature, books with profanity. Everyone in the group wrote fluently on this topic and shared thoughts without hesitation. Obviously, this had become a safe place for participants to air ideas and beliefs about teaching.

In the afternoon teachers made presentations to groups of students. As noted above, having students involved in the institute was a new programmatic feature in the third year—and not a particularly popular one. The students arrived approximately a week into the program. They were officially there for two reasons: (1) to provide an audience for trial runs of the lessons or curriculum units developed by the teachers and (2) to provide an enrichment opportunity for Atlanta's runners-up in the state Governor's Honors Program Competition.

Although they were careful to say that a negative reaction to having the students on campus was no reflection on this particular group of teenagers, teachers were definitely annoyed by the tension that the students' presence produced. They had a point. The institute began virtually the day after school recessed for the summer vacation. Even allowing for the required reading and writing assignments that are always a part of the humanities institute, two weeks in idyllic surroundings with congenial colleagues can be a pleasant way for teachers to begin to unwind from the stress of the school year. As it was, however, in 1987 the first week was spent in anticipation (in some cases apprehension) of the necessity to go back on stage with a group of unfamiliar students in a setting that would lack the cultural norms of a high school classroom. Furthermore, the demonstration lessons would be observed and critiqued (not evaluated) by both peers and higher education teachers.

It may not be surprising, then, that many participants believed the 1987 institute had a hidden agenda. Despite the protestations of Atlanta school administrators that the student group was added to address a weakness of earlier institutes that teachers themselves had identified, a significant number of teachers were convinced that the addition of the teaching assignment was a thinly veiled attempt to ensure accountability for their participation and to evaluate their teaching. Whether or not this was true, it had the effect of casting a pall on the waning days of the institute. Some participants actually departed early, and others were psychologically if not physically disengaged from institute activities.

The addition of a non-peer group raised barriers and constraints in all areas of institute life, both the task-oriented and the social.

On the surface and to an outside observer, the experiment of including students in a sustained professional development activity appeared to have failed, threatening the established goodwill, camaraderie, and collaborative collegiality that had accumulated in two earlier summer institutes and in school-year workshops.[4] The addition of a non-peer group raised barriers and constraints in all areas of institute life, both the task-oriented and the social. Adults do not talk among themselves in the same way when adolescents are present; they do not tell the same jokes; they avoid some issues. Even when specially designated counselors are officially in charge of a group of teenagers (as was the case here), there is a tendency for other adults (especially teachers) to believe that they are somehow implicitly responsible for group behavior. By the final day, all these factors appeared to contribute to a unanimous desire to get down off the mountain and head for home.

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[4] It is, of course, possible that had the students been included in the institute's agenda beginning the first year, participants' expectations would have been entirely different.

Pennsylvania's Commonwealth Partnership

The Commonwealth Partnership involves 12 Pennsylvania institutions of higher education and teachers from school districts across the state. Like the Atlanta Public Schools with the National Faculty collaborative, Commonwealth Partnership activities have focused on instruction in the humanities: literature, history, and foreign languages. Conceived as a three-year commitment, the project originated with the academic deans of the 12 colleges. Each planned to host one summer institute over the three years. Overall administration of the project was centralized on one campus under a project director (a former high school English teacher and assistant principal). The institutes were jointly conducted by secondary and postsecondary teachers. Each literature institute, for example, was staffed by six persons—four college teachers and two high school teachers. This team was responsible for presenting a proposal and, after approval, for planning and implementing the program.

Literature was the first subject undertaken: four three-week residential institutes, involving 151 school faculty members and 24 college faculty members, were held across the state in 1985. In the second summer, history institutes drew 133 teachers at another group of campuses. The foreign language institutes, planned for the summer of 1988, were foreign travel and study programs, organized around particular languages and involving secondary school teachers from New Jersey as well as Pennsylvania.

The Commonwealth Partnership project believes that the three-week residential format was critical to the success of these institutes. Intellectual engagement did not end with the close of the last class or seminar of the day but, rather, went on far into the night through informal rap sessions. However valuable the planned presentations and discussions were as sources of new ideas and materials, it was the mealtime and late-night conversations that cemented friendships and interest groups.

Reflection on the effectiveness of the Commonwealth Partnership institutes has yielded some interesting observations. It is the consensus of persons familiar with all the sites of the program in 1985 and

1986 that, while all the institutes achieved their purposes, the literature institutes were, generally speaking, more successful than were the history institutes. These analysts believe that in part this is the result of intrinsic differences in the way the two subjects are taught. English teachers are generalists: They teach grammar, vocabulary, and critical thinking skills (comprehension, analysis, and synthesis) through writing, speaking, and reading. Although there is certainly a recognizable body of literature that is considered standard or appropriate for introduction to high school students, the good English teacher can teach the same skills using any book. History teachers, on the other hand, are specialists. They teach American history, European history, American government, or some other topic with relatively little crossover or mutual interests. From the perspective of planning an institute, college history teachers found themselves relying more heavily on the lecture format (to the disgruntlement of some participants) in an attempt to cover the range of specialties in a given institute group.

One of the most common structures for collaborative professional development is the nonresidential, sustained activity.

Because foreign language teachers are more isolated than are literature or history teachers within their schools and even within their departments, the follow-up component of the foreign language program took a different shape. The Commonwealth Partnership conducted two post-institute conferences for the 60 participants to provide opportunities for the teachers to join forces as leaders in the profession. To the first conference, each participant brought a school administrator. This program created a forum for the participants to advocate better and more extensive language programs within their home schools and districts. The second conference showcased the curriculum units that participants researched while abroad. To this program, participants invited a colleague from their language department.

The Sustained Collaborative Activity

One of the most common structures for collaborative professional development is the nonresidential, sustained activity. In this typology the word *sustained* implies participation in a program with a particular theme over a period of weeks or months. It is contrasted with the one- or two-day ad hoc activities associated with the dialogues or with standard inservice days or collaborative committee meetings occurring throughout a school year. Like the total immersion approach, sustained collaborative activities are often held during the summer vacation and tend to require daily attendance for one or more weeks. There are other models as well.

California's Project STEP

California's Project STEP (the Student/Teacher Educational Partnership), involving the Santa Ana Unified School District, the University of California at Irvine, Rancho Santiago Community College, California State University at Fullerton, and Chapman College, is most properly termed a comprehensive collaborative model. Project STEP is moving on multiple fronts to increase the college-going rate of its student population. Professional development is one aspect of the activities it sponsors.

In recent years STEP has focused on improving student preparation in mathematics—through dialogue, curriculum development, and improved flow of information to students and parents, but also under the auspices of the state-funded California Mathematics Project, which underwrites professional development institutes on college campuses. Although this program is not limited to teachers from Santa Ana, the district is a targeted area for the institute.

The month-long summer mathematics institutes bring teachers together daily from about 8:30 a.m. to 4 p.m. for discussion and practice of the teaching of mathematics. Both elementary and secondary school teachers are involved. A typical day at the institute includes a whole-group session followed by work in smaller groups organized according to age and grade teaching assignments. The day ends with time for individualized work on mathematics units or for sharing ideas with other participants informally. Completion of the institute earns teachers nine units toward a supplementary teaching credential in mathematics.

During the school year following an institute, the school and college participants maintain communications and resolve curriculum implementation problems through monthly meetings. As the university-based director of the program notes, the main objective of the institute is to convince elementary and secondary mathematics teachers that they are indeed professionals with more than enough expertise to hold and stand by opinions about how mathematics should be taught. A second objective is to remind teachers "to take joy in the subject matter" because the elegance and symmetry of mathematics is all too often lost in the need to "get through the material."

The mathematics institute at the University of California at Irvine has served over 100 teachers in two summers. In many ways its structure—at least from 8:30 in the morning until 4 in the afternoon—is similar to the two total immersion programs described earlier. If thorough evaluations of the education outcomes of both types of structures were conducted, quite possibly their relative impacts on student achievement would look very similar. The principal difference seems to be the addition of another dimension in the residential programs—a social-emotional dimension that is difficult to describe and would be even more difficult to measure.

Yale–New Haven Teachers Institute

The Yale–New Haven Teachers Institute exemplifies another type of schedule for a sustained collaborative activity. This program, which was established in 1978, has the most seniority of any model in the College Board's network of collaboratives. Many publications are available describing the Yale–New Haven Institute's philosophy, goals, and successes.[5] Here our interest is in its structure for collaborative professional development.

The institute is in session for five months each year, from March through July. Fellows of the institute are New Haven middle and high school teachers, selected annually on the basis of the match between their curricular interests and a proposed series of seminar topics. These topics themselves emerge through a canvassing of secondary school teachers throughout the city.

Seminars, lectures, and general advisement are the responsibility of selected Yale University faculty members. (It should be noted that over the years, some very senior Yale faculty members have participated in the institute.) The institute employs a schedule that accommodates teachers' hectic end-of-the-school-year responsibilities. Talks by Yale faculty are held in the late afternoon five to eight times throughout the spring. Seminars convene once a month in March and April and weekly from May through July. Reading and curriculum writing go on throughout the period, with milestones built in so that Fellows can pace their work; technical and editorial assistance are made available regularly. While studying the seminar's subject matter, each Fellow researches and writes a curriculum unit for his or her classroom. The curricular material written during the program is completed by the end of July. At that time the material becomes a resource for all New Haven teachers.

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[5] See College Board, *Teaching in America: The Common Ground—A Report of the Yale-New Haven Teachers Institute.* (New York: College Entrance Examination Board, 1985)

The Yale–New Haven Teachers Institute has had a decade to refine this outline for collaborative professional development activities. At this point, when a teacher applies to become a Fellow, the level of time and commitment required is very clear and the rules of the game are well articulated. No final curriculum product means no payment of the $1,000 honorarium budgeted for each Fellow. Since the inception of the institute in 1978, about one-third of the eligible teachers currently in New Haven middle and high schools have completed the program successfully at least once. This activity clearly can be a rewarding experience for participants.

Despite its structural maturity, the Yale–New Haven Teachers Institute still has issues to confront; among them are maintaining high numbers of teachers who participate on a recurring basis and attracting more of those eligible for the program.

Colorado's PROJECT LINK

PROJECT LINK (Linking Institutions for Networking and Knowledge) is an offshoot of the Colorado Alliance for Science (housed at the University of Colorado-Boulder), a well-established statewide consortium of school districts, institutions of higher education, business and industry, and other concerned groups. LINK, which is in the developmental stage, is specifically designed to foster a partnership between school personnel from the remote San Luis Valley and the resources of Adams State College (located in the valley) and the University of Colorado-Boulder—for the purpose of professional development.

In the summer of 1987 LINK sponsored a two-week commuter workshop for 30 school teachers. The sustained activity, which was jointly funded by the Colorado Commission on Higher Education, Adams State College, and the University of Colorado, emphasized strategies for hands-on science instruction and introduced teachers in rural San Luis Valley to local resources that could enhance their science programs. Ultimately, the project is seeking to develop a locally based cadre of science teacher leaders who can serve as a resource for all their peers in the valley.

As a result of the summer workshop, participants have formed the San Luis Valley Association for Science Teaching, which, with the assistance of higher education teachers, planned and implemented a series of four dinner meetings during the succeeding school year as follow-up activities. Following an agenda of social hour, keynote speaker, and dinner, the group has explored topics such as a coherent rationale for the teaching of science and career opportunities for students of the sciences. Pending funding, LINK will continue and perhaps expand its sustained summer workshop, drawing in new teaching faculty and thus continuing to broaden the base for collaboration. Additional ongoing activities include linking resources (people and materials) from the Front Range of Colorado with the 14 rural school districts in the San Luis Valley.

Facilitating Collaborative Professional Development

Within the overall structures for collaborative professional development employed by the various projects in the College Board's network, individual collaboratives have identified and successfully used a variety of incentives, organizational arrangements, funding mechanisms, and other strategies to facilitate and ensure a lasting relationship between school districts and institutions of higher education. Some examples of ideas that work are described and discussed on the following pages.

. . . school and university have acted collaboratively to improve the professional development of novice teachers—a strategy only rarely employed by the many teacher-preparation institutions across the nation.

The Broad Front Approach: Milwaukee Public Schools/University of Wisconsin–Milwaukee

Like Santa Ana's relationship with the several institutions of higher education in Orange County, California, collaboration between the Milwaukee Public Schools (MPS) and the University of Wisconsin–Milwaukee (UW–M) involves activities on many fronts, including professional development. A major effort in recent years has been the revitalization of an at-risk school through a special relationship with the university.

Several types of professional development activities have figured in the overall plan to turn around Milwaukee's Riverside High School. For example, to qualify for a position at this school, teachers are now required to earn 15 or more units of graduate work in their specialty area and 3 in educational research methodology. Staff already teaching in the school at the time the innovation began have received tuition reimbursement for courses needed to meet the new requirement. New or transfer teachers, however, must absorb the cost of the professional development requirement themselves. To assist teachers in accumulating the needed credits, the university has held some graduate-level courses at the high school. This has been a popular strategy.

Another feature of the plan is the utilization of Riverside as a laboratory school for student teachers from the university's Department of Education. Education department faculty have worked closely with school staff to clarify expectations for both student teachers and supervising teachers. Teachers were also asked to critique the university's teacher-preparation program, and modifications were made based on their suggestions. Thus, school and university have acted collaboratively to improve the professional development of novice teachers—a strategy only rarely employed by the many teacher-preparation institutions across the nation.

The step that has probably had the greatest impact on the success of this particular collaborative effort is identification within the high school of a full-time "university facilitator." The position, which is unique within the school system, is occupied by a former teacher. In her own words, her principal responsibility is "knowing what the university has available. They say 'Let us know what you want.' But you have to know what to ask for."[6] Over the past two years the facilitator has unearthed new ways in which the university can be helpful to teachers. One vast resource is its new and impressive Golda Meir Library. All teachers are eligible for research and borrowing privileges at the library. A number of social studies teachers have been trained to guide students through the library's huge Geographical Society collection, recently acquired from the New York Public Library. The director of the library is eager for it to become a community resource; a good place to begin in getting this point across is to involve teachers.

Other mechanisms for professional development associated with this whole-school project include (1) the $500 research grants for teachers, with half the amount provided by the school system and half by the university, and (2) the opportunity for teachers to act as adjunct faculty members in the university's several summer precollege programs for at-risk youth. As a combination package, Riverside High School, in collaboration with the University of Wisconsin–Milwaukee, offers a far richer assortment of professional development activities than do 99 percent of the high schools in the country.

The Importance of Genuine Collegiality: Yale–New Haven Teachers Institute

The adjunct university faculty status offered to a few teachers at Riverside High School in Milwaukee is the right of *all* Fellows participating in the Yale–New Haven Teachers Institute. Fellows are "full members of the Yale community" for a year beginning at the time that they become associated with the institute. In addition to such benefits as library privileges, their peer status with the university teaching staff is marked by the inclusion of their names in the university directory of faculty and staff—a small but highly symbolic gesture.

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[6] This theme of uncovering new local resources applies to other collaboratives as well. Colorado's PROJECT LINK found that teachers attending its summer workshop were most appreciative of leads to science education resources readily available in their immediate area—the San Luis Valley.

The Yale–New Haven Teachers Institute further emphasizes its commitment to collegial equality in its administrative structure. The institute has a full-time director who is a Yale employee. This is a necessity for an operation that is highly institutionalized and requires frequent and ongoing communication with many departments throughout the university and the school system. The bulk of administrative and governance activities, however, are managed by "institute coordinators," drawn from the ranks of participating teachers. The coordinators, in effect, constitute a legislature for the institute, serving as representatives for the interests of all secondary school teachers in the district as well as developing and enforcing the rules that regulate participation. As long as there are teachers who are willing to contribute their time, this is a highly workable arrangement that puts ownership of the institute squarely in the hands of New Haven teachers. Yale has signaled its support for the institute and its collegial practices by seeking an endowment to secure the program's future.

The Importance of Time: Milwaukee Public Schools/University of Wisconsin–Milwaukee and Greater Boston Foreign Language Collaborative

Time is an important variable for virtually every collaborative project examined in this study. In short, there is never enough time. Collaborative professional development activities are nearly always layered onto the already packed schedules of high school and college teachers. (The exception may be summer workshops and institutes, but even participation in these means the sacrifice of some other activity—research, time with children and spouses, hobbies, or sheer relaxation.) Furthermore, time is an issue or a problem on at least two levels: planning and organization of collaborative activities and participation in those activities.

In many ways the participation issue is more easily resolved. If collaboration involves a one- or two-day workshop during school hours, most districts can arrange release time for teachers who elect or are required to attend.[7] Participation in after-school, weekend, or summer activities is presumably an option for participants, although administrative arm twisting or state and local recertification requirements undoubtedly play a role. Frequently, school districts and higher education institutions encourage participation by paying registration or tuition fees for collaborative activities.

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[7] While it is the author's somewhat subjective impression that release time is more readily available to teachers than it was 20 years ago, some, but not all, participants in the EQ Models Program note that there are more and more competing demands on that time.

The issue of making time for the planning and organization of collaborative professional development events is somewhat more complex. Even a one-day workshop takes considerable forethought; planning an intensive three-week institute is a major undertaking. In all the projects studied where collaboration is highly developed, somebody at some time came to the realization that a tentative and emerging relationship would not be sustained unless more time was made available to nurture it. Projects have accomplished this in different ways.

From the school system perspective, the designation of a key contact person within the university has been critically important to the collaborative process.

It has already been noted that Riverside High School in Milwaukee has that city's only full-time university facilitator, or coordinator. The University of Wisconsin–Milwaukee has also assigned an administrator to act as official liaison for all collaborative activities with the schools, including Riverside. From the school system perspective, the designation of a key contact person within the university has been critically important to the collaborative process. A university is a large and often bewildering place for individuals who do not fully understand its structure. The liaison is able to act as an information provider and a facilitator when schools are seeking particular types of resources. In essence, having a key person on each side of a partnership is a timesaving organizational device. As the individual who holds such a position becomes increasingly familiar with the mutual needs and characteristics of the other party, appropriate connections are easily made.

Other collaboratives in the College Board network use variations on the official liaison strategy. Both the Yale–New Haven Teachers Institute and Pennsylvania's Commonwealth Partnership employ a project director whose principal responsibility is to keep the efforts on course. While school and university faculty members may be ultimately responsible for determining and organizing the content of collaborative professional development in these projects, someone must be available to deal with funding and political issues, with public relations and new recruits, with small and large crises. The even larger National Faculty, whose relationship with the Atlanta Public Schools was described earlier, maintains an administrative infrastructure that coordinates and troubleshoots many collaborative professional development projects throughout the country. This places some beneficial alliance between the actual collaborative activities and the political process of getting them organized.

Most collaborative arrangements seem to begin with a shoestring budget, some interested volunteers, and a lot of goodwill. As long as the activities envisioned are relatively limited—dialogues, occasional committee meetings, quarterly discussion groups—little overhead is needed. If the level of activity increases or if the reliance on volunteerism goes on too long, time and energy can become obstacles to continuation. The Greater Boston Foreign Language Collaborative has faced this issue. Organized as an Academic Alliance,[8] the Boston collaborative has no institutional base and operates on a minimal budget; it is a voluntary association of foreign language teachers from several school systems, colleges, and universities in the area. A steering committee plans and organizes collaborative activities.

Since 1984 the Boston collaborative has held four sessions each year, ranging from College Board-sponsored dialogues to down-home demonstrations of teaching strategies by forum participants. Recently the collaborative reached a point in its development where the spirit of volunteerism that had sustained it was flagging. The stalwarts were tired and busy. Although there were many foreign language teachers in the area who were eager to attend the planned events, few were willing or able to devote time to organizing them.

The Foreign Language Collaborative met the challenge and found ways to infuse new enthusiasm and energy into the enterprise. Plans are now under way for a third dialogue involving administrators and guidance personnel as well as foreign language instructors.

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[8] The Academic Alliance model of collaboration was developed by Claire Gaudiani, then of the University of Pennsylvania, and now president of Connecticut College, as a mechanism for allowing teachers of foreign languages at various levels of schooling to share their common interests and concerns. Now expanded to all disciplines, alliances typically operate as forums in which instructors come together periodically for discussions that may be structured or unstructured.

At one point the leadership wondered if it might not have to change its nature, look for an institutional base, and actively pursue major funding to support a core of operations. This would not be a trivial decision. The current steering committee sees major trade-offs associated with institutionalization. For example, the current membership includes school districts and colleges that are not natural bedfellows, either within or between levels of schooling. This diversity in itself has become a major learning experience for all concerned. If a single institution, probably one of the colleges or universities, were designated as the base for the project, the perception of joint ownership among a diverse group might well be altered. There is, too, the issue of accountability to funders, which inevitably would constrain the typically *ad hoc* character of meetings under the informal alliance model.

Members of the collaborative are well aware that the success of an endeavor like theirs will never be guaranteed; limited funds are likely to remain a problem and volunteerism is essential to the collaborative's vitality. A considerable commitment of time and energy, particularly on the part of the steering committee, is required to keep the collaborative alive and well. So far the effort has been successful.

A considerable commitment of time and energy, particularly on the part of the steering committee, is required to keep the collaborative alive and well. So far the effort has been successful.

Some day the Boston collaborative may have to make a choice: to buy time at some cost to its original conception of itself or to limit what it can accomplish (and perhaps its very existence) because of a lack of time. It is certainly not alone in this dilemma. Many collaborative relationships in the College Board network and elsewhere have been consciously or unconsciously limited as to what can be achieved on an entirely voluntary and low-cost basis. As long as the mutually accepted goals of the partners are met in this way, there is no problem. When doubts about capacity to carry the load creep in, then it is time to reevaluate.

The Outcomes of Collaborative Professional Development

For the most part the collaborative projects in the College Board's network are just beginning to consider the question of formal evaluation of outcomes—particularly input-output measures such as student retention and graduation rates, proportions of students going on to college, and student achievement.[9] Many of them have, however, informally assessed the impact of the activities they sponsor (including professional development), and individuals have certainly reflected on the importance of collaboration for their own professional lives.

The Outcomes for School Faculty Members

Atlanta Public Schools with the National Faculty Summer Institute

It would be Pollyanna-ish to assume that all outcomes of collaboration are positive.

In the interviews conducted for this study, high school and college teachers were best able to talk about professional development activities in terms of personal intellectual renewal or growth. At the close of the Atlanta Public Schools with the National Faculty Summer Institute, for example, one group summed up the positive outcomes of the experience in the following terms: "intellectual stimulation," "increased peripheral vision," "fellowship," "new vistas," "appreciation of the interdisciplinary approach." Another group graphically described themselves as "cultural vampires," taking all they could from the National Faculty and from each other.

It would be Pollyanna-ish to assume that all outcomes of collaboration are positive. At least in 1987, many participating Atlanta teachers also articulated a debit side to the summer institute. In large part, their grievances were focused on the issue of whether or not students have a legitimate place in a collaborative professional development program. That issue became a catalyst for the expression of other negative outcomes.

Some perceived tensions that they did not recall from previous years and speculated that they arose because of polarization around feelings about the students. Others thought there was a pressure to push, push, push and rush, rush, rush, with little time for the reflection needed to absorb new ideas, new books, or new professional relationships. The regular ringing of the college chimes became a metaphor for pressure; like the bells at school, the chimes signaled a need to move on whether or not one was in mid-thought. "Teaching, with its lesson plans, objectives, and need to perform," said one teacher, "is different from intellectual pursuit. We came here for the latter."

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[9] The Yale-New Haven Teachers Institute is an exception. See the Appendix to ***Teaching in America: The Common Ground*** (New York: College Entrance Examination Board, 1985) for evaluations of the program.

Did the positives outweigh the negatives in the Atlanta summer institute? Probably. There is no question that the majority of teachers valued their exposure to the dedication, creativity, and expertise represented by the National Faculty participants. Even in the waning days of the institute, when enthusiasm had long since peaked and thoughts of home were uppermost, the group responded enthusiastically to lectures and to both planned and impromptu social gatherings in which faculty sought to resurrect community spirit. In the long run, it is likely that these are the moments that will be most vividly remembered, not the mealtime or small-group gripe sessions.

How do the genuine personal rewards of professional development translate into teaching practices that improve student performance and achievement?

That secondary school teachers have spoken so positively about the personal rewards of professional development is certainly gratifying to the Atlanta Public Schools administrators who help to plan and conduct the summer institutes. However, those administrators must still confront questions and problems keenly believed to exist by many others who conduct professional development programs. How do the genuine personal rewards of professional development translate into teaching practices that improve student performance and achievement? When teachers identify personal satisfaction as a primary outcome of professional development, how can programs that set improved student learning as an outcome assess their own effectiveness? The general problem these questions raise is addressed in the study's conclusion.

Pennsylvania's Commonwealth Partnership

The Commonwealth Partnership's summer institutes in literature were evaluated by a team from the Middle States Association of Colleges and Schools. An overwhelming proportion of the participants (97 percent) rated the four institutes as excellent or good. It is their comments and the long-term outcomes, however, that tell the real story. The following are typical of the reviews the Middle States team collected:

> The institute has surpassed my initial expectations. The choice of the subject matter, the depth of the discussion, and the presentations—in essence, the intellectual stimulation—has given me a "self-renewal" I didn't think possible.

> I would like to be able to convey to every other teacher the sense of community of the institute and the sense we must return to being thinkers.

Administrator commitment was considered critical if an institute's impact was to be sustained and disseminated.

> The primary strength has been the sustained dedication of both the staff and the participants to engage in a collegial exchange.

> I have been inspired to plan careful follow-up activities directed toward myself both as an individual and as a professional English teacher.

Pennsylvania English teachers thus left the institutes stimulated and rejuvenated. The project sought to ensure that follow-up activities would take place through two principal mechanisms: (1) the involvement of administrators, who were required to approve teacher applications for a place in an institute as well as to personally attend the institute for a day or two, and (2) an $800 stipend to each participating high school, to use as it saw fit in improving its literature program.

Administrator commitment was considered critical if an institute's impact was to be sustained and disseminated. The enthusiasm of a single teacher after a marvelous summer experience goes only so far without some official backing. As a persuasive strategy, bringing administrators to the institute worked brilliantly. The project director reported that one principal was literally moved to tears after a panel discussion on what the institute had meant to participants.

Back in their schools, the English teachers drew on the stipend, on their new contacts with college English departments, and on their own newly bolstered sense of themselves as thinkers and scholars to arrange a variety of literary inservice and professional development activities for their colleagues. Because of friendships made at the institutes, inter-district activities increased. Beyond the strictly job-related outcomes, institute "graduates" have also found or made opportunities for regular reunions. Fifteen to twenty teachers from the Bryn Mawr Institute, for example, have continued to meet regularly as a book club for over two years. Former Fellows also arrange to have dinner at least once at the annual convention of the National Council of Teachers of English (NCTE).

The Commonwealth Partnership built on this experience in planning its 1988 foreign language program for secondary school teachers of French, German, and Spanish. The EQ Models Program was substantially redesigned to match the needs of language teachers, both in terms of content and of structure. Although college campuses in Pennsylvania had been effective sites for the literature and history programs, project planners believed that month-long immersion institutes abroad would better enable teachers to refine their linguistic skills and to update their knowledge of contemporary culture in France, Germany, and Spain.

To create a sense of community among the 60 participants, divided by languages and separated into three different summer institutes, planners developed a pre-institute workshop for all three language groups. This workshop examined the philosophy and practice of proficiency-based instruction as outlined in the College Board's publication *Academic Preparation in Foreign Language* (New York: College Entrance Examination Board, 1986). The common pedagogical orientation served to unify the disparate experiences abroad and to guide the application of these experiences in the classroom.

All in all, the Commonwealth Partnership model of collaboration has proved to be highly popular and successful. It has already directly reached 276 English and history teachers—and through them, many more. Offshoot activities have so far proved durable, and many strong relationships have been forged.

Milwaukee Public Schools/University of Wisconsin–Milwaukee

Milwaukee has so many collaborative activities that it would take a very long time to detail all the outcomes of each professional development effort. A few are highlighted here.

As a result of numerous collaborative thrusts, Riverside High School is very different from what it was six years ago. One indicator of the school's rebirth is its current status as a plum assignment for teachers. Riverside is a good place to teach, partly because of the many collaboratively provided extra opportunities for staff support. Not only do teachers want to work there, increasingly they also want their own teenagers to attend Riverside. Furthermore, some instructors from the university have switched allegiances and are now teaching at Riverside, where they can command higher salaries.

Some teachers are offered the opportunity to act as adjunct faculty during the university's pre-collegiate summer programs for at-risk high school students. One teacher from Riverside described her personal experience in this role. She and a university supervisor of student teachers collaboratively developed a course to introduce high school students to the field of education. During her time as a member of the university faculty, she was given an office, keys, and the use of all facilities. To her amazement, the dean of the school of education came to personally welcome her aboard. Overall, her direct experience of collaboration has been extremely positive, which she is eager to repeat.

Not all reports on the effectiveness of collaboration between Riverside High School and the university are glowing. The English department chairperson at Riverside has found it difficult to establish a close working relationship with the English department at the university. In his opinion other departments—social studies and science, for example—have collaborated more successfully than has English. Part of the problem, he believes, is that the position of English department chairperson at the university rotates on a regular basis, leaving Riverside without a clear-cut and stable contact.

Another issue concerns the university's somewhat variable policy on accepting grades on Advanced Placement (AP) examinations for college credit and its failure generally to establish clearly understood expectations for writing and other English skills that college entrants should have.

Perhaps the most substantial outcomes of collaborative professional development activities in Milwaukee are related to teacher training and induction. The school system and the university are gradually working toward a mutual understanding of the background that a successful teacher in an urban school system must have. The collaboration between Riverside High School and the university's school of education is the vanguard of much more extensive activity planned for this area. From the teachers' point of view, it is only sensible that higher education should finally take heed of realities about beginning teaching experiences that have been common knowledge in high schools for decades.

> *The school system and the university are gradually working toward a mutual understanding of the background that a successful teacher in an urban school system must have.*

The Outcomes for College Faculty Members

High school teachers expect to be asked what they have taken away from a professional development activity. For many college faculty members, this question comes as a surprise. In part this is probably because however collegial the partnership, higher education expects to give to, rather than take from, the relationship. It is also true that higher education teachers encounter opinion-based program evaluation far less often than does the typical high school teacher, who rapidly becomes a master of the Likert scale. When asked to give personal reflections on the meaning of collaborative professional development activities, college faculty members offer interesting and diverse responses.

Atlanta Public Schools with the National Faculty

The National Faculty offers its designated professors the opportunity to work collaboratively with colleagues from other institutions of higher education as well as in partnership with the schools. For some (and maybe all) participating college teachers, the strong intellectual and personal intercollegiate friendships that result from the National Faculty's team approach are the primary benefit of the exercise.

Not that the relationships established between college and high school faculties are unimportant. To the contrary; at least in the Atlanta collaborative, there were many observable instances when school and college teachers sought each other out, both within and outside formal sessions. Over lunch, for example, a professor of music consulted with secondary school music teachers about good gospel numbers to use with his college's chorus. On a bench under a tree, another professor conversed at length with two school teachers during an afternoon break. Tables were mixed during late-evening pub sessions. But after three years of planning together as a team to make the professional development activities for Atlanta school teachers work, the college teachers on the team clearly thought of themselves as a peer group. That was where their essential loyalties lay.

Pennsylvania's Commonwealth Partnership

In Pennsylvania the college faculty members who taught in the summer institutes have continued to serve as resource advisers to the participating schools. They are frequently invited to make presentations or to conduct workshops. In addition, institute Fellows feel free to get in touch with college teachers as personal or professional references and, in some cases, to discuss research and writing projects.

What did the Pennsylvania Commonwealth Partnership college faculty members take away from the institute experience? For one thing, several now have friends who just happen to be high school teachers. This has nothing to do necessarily with professional relationships; people simply met and liked each other. From the point of view of experiences traditionally valued by the colleges and universities in the collaborative, participation in an institute counts as service to the community. One institute leader has been identified by the college administration as a "can do" person. In the long run, this may lead to a new career in administration; for the present, it means many small, extra responsibilities. Another professor, a former high school teacher, found the whole institute program nostalgic. He thoroughly understood where the high school teachers were coming from—the isolation and routine nature of much of their professional life, the minimal opportunities for exercising genuine intellectual curiosity. For many other professors, this came as a revelation. They were surprised by the strength and depth of the emotions aroused by some institute discussions. It was an education.

Milwaukee Public Schools/University of Wisconsin–Milwaukee

To a considerably greater extent than in the average institution of higher education, faculty members at the University of Wisconsin–Milwaukee have been encouraged to find ways to cooperate with the city's schools. Although it is still possible for them to avert their eyes and avoid becoming involved in collaborative activities, many university faculty members have found relationships with the school faculties highly rewarding.

The school of education has been particularly active in the collaborative arena. The assistant dean noted that there are many strong incentives for maintaining close contact with the schools. If you are placing dozens of prospective teachers in the field during any given semester, you would like to be assured that there is complete understanding about what those college students should be observing and doing. In addition, good relationships with the schools ensure access and availability of data for faculty research projects. More so than other divisions of the university, the school of education views involvement with the schools as a positive mark on a faculty member's dossier.

Many attitudes have changed as a result of increased collaborative activity in Milwaukee. Some professors of the sciences and of engineering have been so impressed with the enthusiasm and curiosity of precollegiate students on campus that they are coauthoring articles with teenagers. The English dialogue, pushed for by the university and collaboratively executed, led to a university-based effort to form an academic alliance around the theme of writing. It was planned that every teacher at Riverside High School would have direct access to computer-based literature searches through the university library by January 1988. The list goes on. Although Milwaukee does not have perfect understanding between its schools and its university, it is clear that a large and influential segment of the university community has been won over. In time it may become difficult to determine where the school system ends and the higher education system begins. That would be the ultimate form of collaboration.

Conclusion

This case study has described some of the activities and issues associated with professional development ventures involving planned school–college collaboration. It is in no sense an evaluation of those ventures. Rather, it is an outsider's overview of, and perspective on, activities engaged in by a selected group of collaborative members—with an eye to identifying key features and what works under certain sets of circumstances. Ultimately the study may be of use both to the projects themselves, as their administrators review where they have been and where they are going, and to other settings in which collaboration may be under consideration.

Perhaps the major question to be asked in summing up is this: Does collaborative professional development appear to differ qualitatively from other types of activities to which teaching professionals are accustomed?

Perhaps the major question to be asked in summing up is this: Does collaborative professional development appear to differ qualitatively from other types of activities to which teaching professionals are accustomed? At many times and in many places in our education system, activities designated "professional development" have been dismissed, if not ridiculed, by the faculty as trivial, trite, and tedious. In general this has tended to be true because the *goals* of the activities either have been imposed from the top down, which the faculty resists, or have simply been obscure. There should be nothing puzzling about such reactions. None of us takes kindly to demands on our time when we can envision no clear utility. Nor do we readily embrace the results of planning and decision making over which we have little or no control.

One longtime observer and critic of normative staff development activities in the schools has noted that there are really two separable goal areas for professional development. One involves "conventional" (a somewhat unfortunate term) goals such as more effective pedagogy, introduction of innovative curriculums, or increased numbers of students going on to college. The second goal area involves individual or contextual concerns such as greater collegiality, self-actualization, and organizational problem-solving ability.[10] This educator does not suggest that one set of goals is more or less valid than the other but rather urges recognition of the legitimacy and interrelatedness of both sets of ends.

This point seems particularly well taken in the context of the projects associated with the Educational EQuality Project's network of school–college collaboratives. The ultimate goal of quality and equality in education for *all* students is a global (conventional) mission accepted and articulated by all the participating projects. As an operational goal, however, it is far too sweeping an outcome for some project planners and participants to constantly bear in mind. Others formulate professional development activities that they state are ultimately intended to improve student learning. As we have seen in the case study, when faculty members are asked about the importance of collaborative professional development activities, they respond in terms of personal renewal and intellectual growth and awareness. The personal dimension thus becomes an important intermediate or parallel goal, which may ultimately translate into practices or attitudes that directly serve the larger objective of quality and equality in education. Collaborative professional development, however, is not merely a means to improve student outcomes. It is an important and legitimate end in itself.

Collaborative professional development, however, is not merely a means to improve student outcomes. It is an important and legitimate end in itself.

The very concept of collaborative professional development seems to address some of the problems and stereotypes that have plagued educational staff development efforts for years. In the first place, the whole notion of collaboration is rooted in the concept of collegiality. It is clear that every project investigated for this case study had internalized the idea that schools and colleges have a mutual interest in improving the education of adolescents and should address this problem as professional peers. If one believes that there has historically been a barrier between high schools and colleges, then this is a major breakthrough. Educators on both sides have had their eyes opened.

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[10] Gary A. Griffin. Guidelines for the evaluation of staff-development programs. *Teachers College Record* 80 (September 1978): 126-39.

The term *professional* is key here. In the minds of many, teachers are staff, and at some point they begin to think of themselves in that way—as a collective noun. The collaborative activities examined here deliberately encourage teachers to disaggregate themselves and rediscover their individual capacity to be critical thinkers and problem solvers. Their comments show that they are inordinately grateful for the opportunity, suggesting that outside the context of collaboration there is a dearth of genuinely challenging professional development activities. Collaborative professional development, therefore, is apparently very effectively filling a void.

One final point should be made. The case study describes several different kinds of activities labeled collaborative professional development. Activities vary widely in magnitude and consequently in cost. While the total immersion and sustained collaborative activity models do seem to contribute a depth of meaning and commitment to the experience that briefer formats cannot, it is also clear that more limited contacts can successfully establish foundations to build on. Furthermore, institutions interested in collaboration need not think in terms of workshop models at all. As the relationship between Riverside High School in Milwaukee and the University of Wisconsin–Milwaukee demonstrates, high school and college faculty can interact in assorted small ways that, taken together, form a powerful gestalt. The possibilities are limited only by the creativity of the participants.

Comments on Collaborative Professional Development

The preceding papers describe several collaborative professional development models that represent points on a continuum; one end is a small step beyond the conventional graduate course, and the other is jointly operated laboratory schools, with "collaboration" as the principal variable. (Another variable *might* be "effectiveness in improving teaching," but unfortunately little evidence exists to support that contention.)

The Preparation of Teachers

The university–school relationship of the longest standing and the greatest importance undoubtedly is the professional development of preservice teachers. In their teacher education programs, schools and colleges of education have assumed significant responsibility for the quality of precollege education. Other factors influence the effectiveness of schooling, but the preparation and continuing education of teachers surely ranks high in importance.

Several groups of educators have criticized programs for the preparation of teachers and recommended reforms of these programs. (Stallings and Kowalski cite the reports of the Holmes Group, the Carnegie Forum on Education and the Economy, and a Rand Corporation study, as examples.) These criticisms and recommendations have emphasized consistently the value of linking research and practice, the importance of involving experienced teachers in the preparation of new teachers, and the wisdom of preparing teachers in the practical environment of the precollege classroom (rather than the university classroom).

Laboratory schools, portal schools, induction schools, and professional development schools, as defined by Stallings and Kowalski, have different emphases but are very much the same at the root: They represent a common-sense, practical and long-recognized strategy for the preparation and continuing education of teachers, and research in education. If this is true, we must ask why they are not more in evidence.

According to Stallings and Kowalski, the success of laboratory schools depends upon a joint university–school commitment to a research mission for the school, a research agenda that addresses important questions, appropriate incentives for the school's faculty, and sufficient resources for research. We may assume that it was the absence of those important factors that made laboratory schools fail.

There were additional considerations. For example, when colleges of education could not place all of their credential candidates in a laboratory school, they found they could prepare them as well in regular public school classrooms, and at lower cost. (Increasing the number of laboratory schools apparently was not feasible.)

Finally, and perhaps most importantly with respect to research, laboratory schools often provide an unusually rich educational environment that may be beneficial to the school's students, but sufficiently unlike "typical" schools to undermine the generalizability of research conducted there. Educational research should be conducted in real-world settings.

With regard to portal schools, the authors speculate that "the lack of information regarding the effectiveness of portal schools led to their lack of funding and subsequent demise." We have some difficulty accepting this explanation, since so much of educational practice either lacks empirical evidence of effectiveness, or does not reflect current knowledge about teaching and learning.

The failure of laboratory schools and portal schools perhaps has provided a base of experience on which collaborators could develop a new breed of "professional development schools." Stallings and Kowalski are optimistic about the future of such schools, and they urge the use of evaluation studies to "estimate changes resulting from model intervention."

We suggest, as a corollary, that a professional development school should adopt a short list of explicit goals. A school that attempts to credential teachers, support first-year teachers, provide growth opportunities for experienced teachers, introduce new instructional practices and curricular content with a district, and conduct theoretical research just might be overly ambitious.

We also suggest attention to the incentives for the university faculty who would participate in a professional development school by, for example, conducting on-site instruction for credential candidates and—occasionally, at least—instructing precollege students. The arcane processes of reward within universities could devalue such activities, however unfairly, and thus encourage university participants to avoid the professional development school in favor of more familiar surroundings.

Schools and colleges of education evidently lack neither challenges nor opportunities to strengthen their programs of collaborative professional development for preservice teachers.

The Professional Development of Inservice Teachers

There have been criticisms of professional development programs for inservice teachers, as well. In 1986-87, for example, Little et al. (1987) conducted a descriptive (and non-evaluative) study of professional development of inservice teachers in California. They concluded that despite direct and indirect expenditures approaching $1 billion per year, "the current array of staff development activities and incentives is unlikely to yield substantial change in the thinking or performance of California's classroom teachers" (p. 7). They also concluded that the state's staff development activities reinforce existing practices, are largely unevaluated, and lacking the guidance of a "comprehensive or consistent policy orientation" (p. 9).

Little et al. also found that (a) the state's colleges and universities provide credit-bearing instruction for inservice teachers and school administrators at a cost (in 1985-86) of $70 million dollars, and (b) collaborative professional development and school improvement activities involving universities and schools "consumed less than three percent of all state and federal staff development monies (less than $4 million)" (p. 24). The authors acknowledged the California

State University's collaborative professional development activities and the University of California's California Writing Project.

Several changes have occurred during the few years since this study was conducted. The California Academic Partnership Program and the California Mathematics Project have become substantial contributors to collaborative staff development, and the California Science Project has been initiated. Nevertheless, this study suggests that collaborative professional development in California during the study period was a minuscule component of the state's largely unsuccessful—albeit costly—professional development program.

These are not encouraging findings. They do, however, provide a context for considering Adelman's paper.

According to Adelman, collaborative professional development activities are "special outreach efforts designed to facilitate a mutual understanding of school problems coupled with a mutual commitment to finding solutions. When those activities involve an infusion of new ideas or of new approaches to teaching, they can be defined as collaborative professional development."

Adelman describes two "separable" goals for professional development: one that could be characterized as improving education, and one that addresses the concerns and interests of teachers, e.g., "greater collegiality, self-actualization, and organizational problem-solving ability." She suggests that these goals are both legitimate and interrelated, and argues that the collaborative professional development goal of "personal renewal and intellectual growth and awareness" "*may* ultimately translate into practices or attitudes that directly serve the larger objective of quality and equality in education" (emphasis added).

In concluding her paper, Adelman states, "Collaborative professional development...is not merely a means to improve student outcomes. It is an important and legitimate end in itself."

Something's very wrong here. The personal renewal and educational improvement goals of collaborative professional development surely are both legitimate and interrelated, but just as surely they are insufficient to the present challenges of meeting the educational needs of students in groups that are underrepresented in colleges and universities, and increasing the numbers of young people who advance through the science–mathematics–technology pipeline.

The problem could lie in the similarity of collaborative professional development activities and graduate school courses, which are designed for personal intellectual growth, and well-established in the university faculty member's instructional repertoire. Adelman states that collaborative professional development activities differ from graduate school courses in that they involve understanding problems, finding solutions, and infusing new ideas or approaches to teaching.

Collaborative professional development should respond to a higher standard. It should be integrated with the professional development program of the school and district, designed to support strategic plans for strengthening the school's educational program, and evaluated in terms of its contribution to the successful implementation of those plans.

Colleges and universities (not only schools and colleges of education)—and schools—should redefine their collaborative professional development activities so that they seem less like graduate school courses and more like components of an outcome-oriented program to improve the schools.

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Change

This section presents "The Rand Change Agent Study Revisited: Macro Perspectives and Micro Realities," by Milbrey W. McLaughlin. The Rand Change Agent Study, now nearly ten years old, is a key source of insight and guidance for policy makers and those seeking to bring about change in schools. It contributed to today's emphasis on site-based change, as contrasted with "expert" plans for change that once emanated from the offices of federal agencies and state departments of education.

In this paper, McLaughlin reexamines and updates the findings of the original study. Rather than provide our own abstract of this paper, we reprint the abstract provided *Educational Researcher*, and the author's own acknowledgments, as follows.

The Rand Change Agent study, undertaken from 1973-1978, indicated a significant shift in the ways people thought about affecting planned change in education. Rand found that effective projects were characterized by a process of mutual adaptation rather than uniform implementation, and that local factors (rather than federal program guidelines or project methods) dominated project outcomes. Revisiting these findings in light of today's changed practices and understandings reinforces some of Rand's findings and suggests modifications in others. This reconsideration also underscores the essential contribution of teachers' perspectives as informant and as a guide to policy and suggests that the challenge lies in understanding how policy can enable and facilitate effective practice.

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The Rand Change Agent Study Revisited: Macro Perspectives and Micro Realities

Milbrey W. McLaughlin

From 1973 through 1978, the Rand Corporation carried out, under the sponsorship of the U.S. Office of Education, a national study of four federally funded programs intended to introduce and support innovative practices in the public schools.[1] The four programs identified for study had substantively different objectives: Title III of the 1965 Elementary and Secondary Education Act (ESEA) provided support for local innovative projects; Title VII of ESEA supported district bilingual education efforts; programs financed by the 1968 Vocational Education Act encouraged practitioners to develop new approaches to career education; and the Right to Read Program funded local efforts to eliminate illiteracy. Despite programmatic differences, these programs shared a general, common purpose—the stimulation and spread of educational innovations—and a common policy instrument—the provision of temporary funds or seed money to support new practices.

McLaughlin, M.W. (1990). The Rand change agent study revisited: Macro perspectives and micro realities. *Educational Researcher*, 19(6), 11-16. Copyright 1990 by the American Educational Research Association. Reprinted by permission of the publisher.

Because of their length, numbered footnotes for this article are grouped at the end.

Rand's 4-year, two-phase study examined a sample of 293 local projects funded by these four federal programs in 18 states. Reported under the general title *Federal Programs Supporting Educational Change*, the findings of the so-called Change Agent Study marked a significant shift in the ways policy makers, practitioners, and researchers thought about affecting and understanding planned change in education.

The projects included in the Change Agent Study were the products of federal policies conceived in the late 1960s and local plans developed in the early to mid-1970s. These projects represented the first significant federal level attempts to stimulate change in local educational practices. They were based on relatively unexamined assumptions about change in public schools and the role of government (or policy) in affecting it. Policy makers formulating these early federal education initiatives assumed a relatively direct relationship between federal policy "inputs," local responses, and program "outputs." Policy of that period generally ignored the contents of what economists called the "black box" of local practices, beliefs, and traditions. The common idea behind these substantively distinct federal programs was that more money or better ideas—enhanced inputs—would enable local educators to improve school practice. A cynical, retrospective description of that era of federal education policy might dub it the "missing input model of education policy."

In the approximately 15 years since the programs examined by Rand were initiated in districts around the country, and in the ten years since the final volume of the Change Agent Study was published, practice has changed, policy has matured, the social and political context of schools has changed, and more research on planned change and educational reform has accumulated. This paper reviews the major findings of the Rand Change Agent Study and then asks:

1. Which of the findings have endured? Which conclusions, ten years later, continue to be accurate descriptions of the local change process and the role of policy?

2. Which of the findings have not held up? Which findings, ten years later, should be rethought or revised?

3. What are the implications of this revisionist analysis for policies aimed at improving educational practice and for research aimed at understanding the relationship between policy and practice? Where are we now?

Rand Findings in Review[2]

Rand found that federal change agent policies had a major role in prompting local school districts to undertake projects that generally were congruous with federal categorical guidelines. Local initiatives were generally consistent with what policy makers had in mind in framing broad program objectives. However, Rand analysis found that "adoption" was only the beginning of the story: Adoption of a project consistent with federal goals did not ensure successful implementation. Further, Rand found that even successful implementation did not predict long-run continuation of projects initiated with federal funds. The Change Agent Study concluded that the net return to the general investment was the adoption of many innovations, the successful implementation of few, and the long-run continuation of still fewer.

Rand found that even successful implementation did not predict long-run continuation of projects initiated with federal funds.

Although federal seed money was essential to local efforts, Rand found that money did not always buy the things that mattered most to successful implementation and continuation of local change agent projects. The consequences of the various federal policies examined by Rand primarily depended on local factors, not federal guidelines or funding levels.

Rand examined how characteristics of projects and school districts affected the outcomes of innovations and concluded the following.

The educational methods used by a project determined its implementation and continuation only to a limited extent. This was so because projects with essentially the same strategies could be, and were, implemented differently at different sites. In other words, what a project *was* mattered less than *how* it was carried out.

Project resources did not predict outcome. Expensive projects were no more likely than less costly efforts to be successful. Money mattered in terms of enabling practitioners to get a project under way, but resources alone did not secure successful implementation or project acceptance.

Ambitious efforts were more likely to stimulate teacher change and involvement than were modest, narrow projects.

Project scope was an important consideration. Ambitious efforts were more likely to stimulate teacher change and involvement than were modest, narrow projects. However, projects aiming at significant, systemwide change proved difficult to implement all at once. Planned-change efforts, it seemed, needed to be sufficient in scope to challenge teachers and kindle interest, but not so ambitious that they required too much too soon from the implementing system.

The **active commitment of district leadership** was essential to project success and long-run stability. Without the active support of district central-office staff, including the superintendent and principals in project schools, individuals responsible for implementation typically did not put forth the effort necessary for successful implementation, and once federal support was withdrawn, resources necessary for continuation were unavailable. Further, this commitment, Rand found, needed to be present at the outset to undergird implementation efforts.

Locally selected **implementation strategies** about how to put a project into practice dominated the outcome of federally supported change agent projects. Because they were incompatible with aspects of district realities or with the dominant motivations, needs, or interests of teachers responsible for implementation, the following strategies generally were seen to be ineffective:

- reliance on outside consultants
- packaged management approaches
- one-shot, pre-implementation training
- pay for training
- formal, summative evaluation
- comprehensive, systemwide projects

In general, these strategies were not effective because they failed to provide the ongoing and sometimes unpredictable support teachers needed, excluded teachers from project development, and (intentionally or not) signaled a mechanistic role for teachers.

In contrast, Rand found that effective strategies promoted mutual adaptation, or the adaptation of a project and institutional setting to each other. Effective implementation strategies supported that process of adaptation by provision of timely feedback, identification and correction of "errors," and building broad-based commitment to the project. The following strategies generally were effective, especially when applied in concert:

- concrete, teacher-specific and extended training
- classroom assistance from local staff
- teacher observation of similar projects in other classrooms, schools, or districts
- regular project meetings that focused on practical issues
- teacher participation in project decisions
- local development of project materials
- principals' participation in training

Local implementation choices were determined by institutional context to a significant degree. They reflected local expertise, capacity, and sophistication in project implementation as well as local motivation and management style. Change agent policies, Rand concluded, operated throughout within this local context.

Which Findings Hold True Today?

A general finding of the Change Agent Study that has become almost a truism is that it is exceedingly difficult for policy to change practice, especially across levels of government. Contrary to the one-to-one relationship assumed to exist between policy and practice, the Change Agent Study demonstrated that the nature, amount, and pace of change at the local level was a product of local factors that were largely beyond the control of higher level policy makers. To further complicate matters, these local factors change over time and so create substantively and strategically different settings for policy. The specific findings that hold today are corollaries of this general observation about the relationship between macro-level policies and micro-level behavior. A few of these findings follow.

Implementation dominates outcome. The dominance of local responses (in contrast to policy inputs) has been underscored in subsequent research and has generated what has been called the "implementation perspective" in policy research. Although the policies under study differ from those that were the focus of the Change Agent Study, Rand's conclusion that local choices about how (or whether) to put a policy into practice have more significance for policy outcomes than do such policy features as technology, program design, funding levels, or governance requirements. Change continues to be a problem of the smallest unit.

> *What matters most to policy outcomes are local capacity and will.*

Policy cannot mandate what matters. What matters most to policy outcomes are local capacity and will. The local expertise, organizational routines, and resources available to support planned-change efforts generate fundamental differences in the ability of practitioners to plan, execute, or sustain an innovative effort. The presence of the will or motivation to embrace policy objectives or strategies is essential in the generation of the effort and energy necessary for a successful project. Local capacity and will not only are generally beyond the reach of policy, they also change over time. Local events such as teachers' strikes, fiscal retrenchment, desegregation orders, or enrollment decline can negatively affect both capacity and will as they engender competing pressures and define constraints upon local action.[3] Further, teachers' will or motivation is contingent on the attitudes of school administrators or district officials. Thus, although teachers in a site may be eager to embrace a change effort, they may elect not to do so, or to participate on only a *pro forma* basis, because their institutional setting is not supportive. Consequently, the enthusiasm engendered in teachers may come to little because of insufficient will or support in the broader organizational environment, which is hard to orchestrate by means of federal (or even state) policy.[4]

Local variability is the rule; uniformity is the exception. Although classrooms, schools, and school districts share common features—curriculum structures, grade structures, and student placement policies—they also differ in fundamental and consequential ways. A high school English course in a wealthy suburban classroom differs substantially from a course offered under the same title in an inner-city school. The problems confronting California school administrators differ markedly from those faced by colleagues in Kansas. Dade

County's site-based decision-making project will bear only scant resemblance to a restructuring activity in Santa Fe.

Traditionally, variability has been an anathema to policy makers and cast as the plague of efforts to reform schools because it signaled uneven local responses to policy objectives. Also, variability has been interpreted as a warning sign of trouble in the system. Today, however, there is recognition that variability may be a good thing—that it signals a healthy system, one that is shaping and integrating policy in ways best suited to local resources, traditions, and clientele. However, good or bad, it is as true now as it was when Rand first studied change agent projects that local practices do and will vary in significant ways among sites and over time.

Findings Requiring Revision

The Change Agent Study examined the local responses to the various federal programs supporting educational change within a particular moment of educational policy making. The programs we studied were based in programmatic assumptions and realities that have themselves changed in response to experiences such as those described by the Change Agent Study. As a consequence, a number of the conclusions or interpretations drawn from the study require revision in light of that changed reality and understanding. Three interpretations are especially central to policies and practices developed in support of planned change in education:

- the significance of teachers' initial motivation to participate in a change agent project to predict outcomes
- the role of external consultants or externally specified projects
- the structures available to provide resources and support for teachers' professional growth

The study overemphasized the importance of initial motivation. One interpretation of the Change Agent Study was that policy could achieve its goals only when local instigators supported it and were inspired to carry it out. This analysis was primarily based on the distinction we saw in the field between projects undertaken for opportunistic reasons—available dollars—and those initiated out of perceived programmatic need or promise. In part, this conclusion has continued veracity. It is true that initiation and implementation of a planned-change effort receive important energy from the motivation of advocates—individuals who believe in the effort and are willing to commit energy and effort to its success.

Yet experience has also shown that we did not see or did not recognize instances in which belief follows practice. Individuals required to change routines or take up new practices can become believers. This omission may have been a function of the programs we were studying, that is, innovative efforts that were, for the most part, voluntary from the perspective of the implementing system. The local Right to Read, Title III, Career Education, and Bilingual Education programs supported by federal funds were elective and the consequence of local competition for limited federal funds. Thus, the Rand program sample did not provide instances of programs or strategies imposed upon the local system, such as desegregation efforts, or systemwide entitlement programs such as Title I (compensatory education). Nor did we look to see what happened to skeptical or unwilling individual participants over time.

If we had done either, we would have seen that belief or commitment can follow mandated or coerced involvement at both the individual and the system level. Findings from an investigation of local responses to the policy changes associated with the transition of federally funded compensatory education programs from Title I of ESEA to Chapter 1 of Education Consideration and Improvement Act (ECIA) highlight both the importance of local will and the fact that individuals or institutions originally opposed to an idea can change their minds (McLaughlin, Shields & Rezabek, 1985).

Title I mandated local evaluation of compensatory projects supported through the program; additionally, it required parental involvement in the planning and governance of the local Title I program. Both mandates initially were greeted with objection by local educators and defined significant characteristics of the Title I program. Chapter 1, in an effort to redefine the federal role and reduce federal regulation of local practices, dropped these requirements. Once the regulatory thumb of federal mandate and oversight was released, parental involvement essentially came to an end in all but a few districts that had reason to value it.

Local evaluation of federally supported compensatory education programs, in contrast, continued even after locals no longer had to evaluate their efforts. In some districts, evaluations continued only because local managers were fearful that federal auditors would return and demand them. However, most districts that continued a strong evaluation effort did so because they found it useful. Originally resisted as an intrusion on local autonomy and a waste of time and money, evaluation required by Title I gradually became viewed as important once districts gained competence in carrying out and using evaluation.[5]

The observation that belief can follow practice is important from the perspective of policies aimed at social change. The Change Agent Study's conclusions reinforced the conservative tendencies of the system and implied that policy attempting to change people or practices in ways they were not motivated to change were apt to be futile. Subsequent and different experience has shown that conclusion to be overstated and directs attention to the fit between policy strategies and the incentives or motivation of the implementing agent.

Our conclusions were too skeptical about the role of external agents and their ability to promote positive change in local practices. The Change Agent Study concluded that outside consultants, external developers, or technical assistants were too removed and insufficiently responsive to particular local conditions to provide effective support for planned-change efforts.

Here, too, we were a captive of our sample. By and large, the packaged programs and the outside consultants we observed as part of the Change Agent Study were ineffective because they did not acknowledge features of the local setting that demanded modification or special attention. However, the study's negative conclusions about the role of external agents failed to consider what might be. As the Crandall et al. DESSI study (1982) and other subsequent research has shown, externally developed programs and external consultants can be extraordinarily effective in stimulating and supporting local efforts to improve practice. In these instances, the external agents enabled local efforts to respond to or modify external practices or advice to suit the local setting.

We understand now that it is not so much the external quality of outside practices and experts that inhibits their effectiveness, but how they interact with the local setting.

In this sense the Change Agent Study's finding about the importance of mutual adaptation and the DESSI study's conclusion about the positive outcomes associated with fidelity of replication and outside technical assistance are not as incompatible as they might first appear. Rather, these two studies were based on programs and experiences that were different in at least one critical respect. Rand looked at programs and advisors that generally ignored local factors in an effort to encourage standardized practices. DESSI looked at programs that had incorporated the lessons about the counterproductive aspects of such uniformity. Further, in contrast to the significant developmental nature of the local efforts Rand examined, the projects DESSI studied profited from the experience and direction of well-developed change efforts whose major components could be described. The term *replication* no longer meant mechanistic reproduction, but rather adaptive implementation that remained true to the project's core philosophy and central strategies. DESSI found that reproduction of externally developed projects in a variety of local settings could be achieved, given adequate external support (see Crandall et al. 1982).

This modification of the Change Agent Study's conclusion about the role of external agents also rewrites a discouragingly conservative position regarding the possibilities of change. One implication of the original Rand conclusion is a "tribal" or "village" model of change that relies on local resources and capacity. Social learning of the type assumed by many change agent strategies of dissemination and development consequently would be unlikely to occur. However, we have seen that the broader policy system can learn from its investments and that experience can be telescoped and effectively shared. We understand now that it is not so much the external quality of outside practices and experts that inhibits their effectiveness, but how they interact with the local setting. Reflection on the Rand findings also raises concerns about many of the local activities initiated under the general flag of restructuring. Like the early change-effort projects Rand examined, these local efforts are largely developmental inventions and do not build on well-articulated practice. It seems likely, then, that the first-generation, local restructuring efforts will proceed with much the same unevenness that characterized the first generation of change agent projects, especially where the centrality of teachers' skill development and professional growth is given insufficient attention.[6]

In addition, although the Change Agent Study correctly stressed the significance of the actions and choices of teachers, or what Weatherley and Lipsky (1977) called "street level bureaucrats," and although the study's conclusions underscored the embeddedness of local implementors in a larger system, our conception of the structures most relevant to teachers was too narrow. Our research and analysis took the policy system for granted. That is, we assumed that the structure most relevant to teachers was the policy structure—the federal, state, and local policies—that eventuated in classroom practice. Had we made those assumptions problematic, rather than taken them as givens, we would have seen that although we as policy analysts were chiefly concerned with the policy system, it was not always relevant to many teachers on a day-to-day basis.

This misunderstanding is important because many of the study's conclusions about local responses to change agent programs were based on the assumption that teachers responded to specific policy objectives or strategies. In fact, for many teachers, these policy goals and activities were simply part of a broader environment that pressed in upon their classrooms. Thus, to ask about the role or consequences of a particular program or strategy for practice risked misrepresentation of reality because it gave policy a focus or significance it did not have in the daily matter of classroom life. We did not look beyond the policy structure to consider that the embedded structure of greatest import to teachers might have nothing or little to do with policy—it might have to do with professional networks, school departments, or other school-level associations, or colleagues however organized.

Ironically, although the Rand study was among the first to map backward from the perspective of local implementors and to analyze planned-change efforts associated with macro-level policies, it still was a top-down study because the driving questions reflected macro-level concerns, not micro-level realities. Because we did not understand that fully, I believe our analysis fell short as a description of planned change at the local level and as advice to policy makers and practitioners about how to enhance local practice.

Implications for Policy

This reanalysis of the Change Agent Sudy raises a number of implications for policy aimed at improving educational practices.

One implication is that special projects, or reforms aimed at discrete elements of the education policy system, are likely to be disappointing. The dominance of local implementation, the local factors that make variability the rule, and the fluid and often unpredictable character of the local institutional environment all underscore the *systemic* nature of the problems that change agent policies address. Special projects focused on single issues or single inputs typically (by necessity) ignore the systemic and interconnected conditions that influence classroom practice.

Special projects also are incompatible with the realities confronting teachers and administrators on a day-to-day basis. Educators must respond to multiple, simultaneous pressures and demands. The single-focus assumptions implicit in special projects are inconsistent with schools and classrooms. Further, the demands of special projects can actually diminish overall operations because "the innovation becomes the focus rather than the more holistic, organic, classroom and school life.... Innovations become ends in themselves, and paradoxically, turn out to be diversions from the more basic goals of improvement" (Fullan, Bennett & Rolheiser-Bennett, 1989).

Finally, special projects are often unproductive because they promote a view of the problems before the education policy system and practitioners as bounded and short term. The episodic intervention embodied in programs such as the federal change agent programs Rand studied ignores the fact that reform is steady work (Elmore & McLaughlin, 1988). Many special projects implicitly or explicitly set out to fix the problem they address—such as poor reading outcomes, high drop-out rates, or limited English proficiency. Yet the problems addressed by current state-driven reforms or change agent programs are not acute; they are chronic. Reform needs to be systemic and ongoing; special projects frame the problems of reform artificially and superficially and so are limited in their ability to significantly change educational practices.

A second implication for policy and practice relates to the enterprise policy hopes to affect. The problems addressed by educational change agent policies or strategies for reform lie at the intersection of teacher, students, and subject matter. Content matters as much as process. Many of the so-called innovations or reforms undertaken during the 1970s were correctly derided as simply rearranging the deck chairs—pursuing the appearance of constructive change without meaningful substance, that is, "content-free process." If pre-1970 reforms such as the "new math" or Sputnik-motivated science curricula fell short because specialists ignored process and the importance of local implementation, many of the post-1970 reforms failed because they passed over the "stuff" of schooling—they attempted to install new strategies of decision making, classroom management, or staff development but neglected content. Policy intending to promote more effective educational practice must address both and acknowledge the need for the quite different kind of expertise associated with the management of organizational change and improved content.

Reforms or policies that engage the natural networks of teachers can support change efforts in a more sustained fashion.

A third implication for policy has to do with frame of reference and the need to look beyond the formal policy structure as a channel for promoting improvement and stimulating change. For example, if teachers lie at the heart of successful efforts to enhance classroom practices, then the professional networks that engage teachers comprise promising vehicles for change. The apparent success of teacher groups such as the Bay Area Writing Project, the Puget Sound Consortium, or the Urban Math Collaborative suggest that change strategies rooted in the natural networks of teachers—in their professional associations—may be more effective than strategies that adhere solely to a delivery structure outlined by the policy system. Reforms or policies that engage the natural networks of teachers can support change efforts in a more sustained fashion.

Further, because teachers rather than policy are responsible for integrating new practices with traditional routines, it is possible to acknowledge the systemic nature of change. Reforms acknowledging the naturally occurring relationships of practitioners also open policy to the involvement of new institutional actors and promising organizational connections overlooked in policy tied to the formal delivery system.

...an important lesson of the past decade is that removing constraints or obstacles does not by itself ensure more effective practice.

A fourth implication also concerns the frame assumed by policy (and by policy research). Many reform policies focus on removing or buffering constraints to effective practice, that is, inadequate materials, lack of appropriate teacher preparation, or insufficient teacher voice in curriculum decisions. However, an important lesson of the past decade is that removing constraints or obstacles does not by itself ensure more effective practice. A teacher with reduced class size or new materials, for example, does not necessarily do a better job in the classroom.

Other and often different factors are required to enable practice.[7] In addition, the factors that enable practice—productive collegial relations, organizational structures that promote open communication and feedback, and leadership that "manages" opportunities for professional growth and nurtures norms of individual development, for example—are not amenable to direct policy fixes because they do not operate singly or consistently across settings.

A focus on enabling practice within the presence of existing constraints highlights the conditional, mutually reinforcing, and contextual nature of factors that support effective teaching. For example, shared mission and schoolwide goals that encourage teachers to do their best require leadership at the school site to manage the necessary resources and processes. However, in order for shared mission and supportive leadership to enhance classroom practices, institutional structures need to be in place that provide regular feedback about teachers' performance, permit teachers to be heard in the area of curriculum decision making, and promote collegial interaction (Fullan et al. 1989). All of these enablers, in turn, are enhanced by the presence of multiple opportunities for teachers' professional growth. By itself, any one of these factors can promote better practice, but only in the short term. Sustained support for effective classroom practice assumes the co-occurrence of these and other enabling factors at the school site.

Finally, this perspective, which moves from understanding policy implementation to enabling effective practice, underscores the essential contribution of teachers' perspectives as informants and guides to policy. We have learned that we cannot mandate what matters to effective practice; the challenge lies in understanding how policy can enable and facilitate it. These are the questions that, ten years later, a change agent study should be asking.

Endnotes

[1] Paul Berman was the project director for this study; I was the deputy project director. Berman and I were assisted by an extraordinary interdisciplinary team of researchers: Gail Bass, Richard Elmore, Todd Endo, Peter Greenwood, Dale Mann, Jerome Murphy, Anthony Pascal, Edward Pauley, John Pincus, Marta Samulon, Gerald Sumner, John Wirt, and Gail Zellman all played central roles in the project.

[2] The study was conducted in two phases. A series of five reports described the results of the first phase of the research that focused on introducing and implementing innovation (Volumes I-V of the Rand study). The results of the final phase are contained in Volumes VI-VIII.

[3] This section draws directly from Volume VIII of the Rand study.

[4] Mary Metz of the University of Wisconsin adds the important caveat that although is difficult to mandate what matters, *what* you mandate matters.

[5] There is an "embedded" complexity of teachers' motivations and the difficulty of influencing district or school level motivation by means of macro-level policies.

[6] As a reviewer elaborated, more specific evaluation requirements have been added to Chapter 1 over time. The Hawkins amendment to Chapter 1 (HR5) included detailed evaluation direction: annual reporting of pre-post norm referenced test results; annual review of individual student progress toward program exit goals; a school-by-school review of the Chapter 1 program activities and consequences.

[7] This point about the current wave of restructuring reforms was suggested by an anonymous reviewer, who offered the assessment that one of the most important lessons learned from the experience of federal change agent policies is the recognition that skill development is necessary for most innovations to be implemented and can be provided through a combination of insiders and outsiders offering training, help, assistance, and support. This point elaborates my concerns about the village model of educational change.

[8] One way to view the effective implementation strategies identified by the Change Agent Study is that they all functioned to enable teachers' efforts to change classroom practices and learn new, more effective ways of operating.

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Commentary on Change in University–School Collaboration

McLaughlin lists five implications for policy aimed at improving educational practices. These policy implications are based on both the original Rand Change Agent Study and McLaughlin's update of that study. While policy makers at the federal and state levels should consider these insights, they are equally important for policy makers at the district and site levels, and for their university collaborators. In the following comments, we excerpt and briefly discuss each of these "implications for policy."

Focus on systemic reform, rather than special projects.

> Reform needs to be systemic and ongoing; special projects frame the problems of reform artificially and superficially and so are limited in their ability to significantly change educational outcomes.

McLaughlin defines special projects as "reforms aimed at discrete elements of the educational policy system" and "projects focused on single issues or single inputs." The author gently but firmly rejects such projects because they ignore the connectedness of classroom practice, they are incompatible with the holistic approach that teachers and administrators take to their daily work, and they represent education's problems as acute, rather than chronic.

We are all familiar with special projects. They are the products of the buzz-word mentality and short-lived enthusiasm of some policy makers and legislators, which we perhaps could associate with the "sound-bite" style of the news media and political campaign strategists. Narrowly focused projects often are represented as "targeted" projects, to demonstrate that policy makers are aware of and concerned by the need that has most recently reached the popular consciousness.

Special projects might appeal to those who wish for a "quick fix," but ultimately they distract from the real work of reform, waste time and other resources, and foster cynicism among participants and observers. They often result in the widely deplored phenomenon of dropping an innovation soon after the special funding dries up.

The alternative approach to reform begins with a strategic action plan (there are several versions from which to choose) that, for example, addresses mission, goals, objectives, and tasks; defines activities and time-lines that are realistic and affordable; and incorporates mechanisms for monitoring progress and making mid-course corrections.

Relating this point to university–school collaborations, we should ask, "What role, if any, should a university collaborator have in the development of such a strategic action plan?" One could argue that the school or district should develop its plan first, and then invite collaboration in the implementation of that plan. This approach would tend to ensure the school's or district's ownership of the plan, and provide a framework into which the university collaborators could fit their contributions.

On the other hand, that approach would tend to cast the university in the role of service provider, not partner, and perpetuate the view that the school is the university's client. These collaborators should be working toward a closer relationship, in which both parties recognize that both the reform process and their commitments to that reform must be systemic and ongoing. University involvement in strategic action planning ideally would enrich that planning by, for example, improving access to relevant research, identifying needs and opportunities for research, revealing new opportunities for collaborative work, influencing teacher education programs, and strengthening the university's sense of its own ownership of the plan's goals. At the same time, both parties should acknowledge that the teachers and site administrators will carry the burden of implementing the plan.

Integrate reforms of process and content, and professional development.

> Policy intending to promote more effective educational practice must address both [process and content] and acknowledge the need for the quite different kind of expertise associated with the management of organizational change and improved content.

This idea relates to the preceding discussion of the importance of systemic, ongoing reform. McLaughlin mentions waves of reform in which reformers emphasized either content or process, but not both, and suggests a general lack of attention to the professional development of teachers and administrators to assist them in managing change. Today, in some arenas at least, it has become "correct" to focus on updating and upgrading the teachers' mastery of content (university faculty know more about content than process), de-emphasize continuing education on instructional methods, and (continue to) ignore the knowledge and skills that are specific to managing change.

Let us not underestimate the challenges of integrating process, content, and professional development.

Let us not underestimate the challenges of integrating process, content, and professional development. The relative ease with which planners can address one or the other of these dimensions—especially when a subject-matter specialist is steering the process—can be seductive. Nevertheless, sound policy and effective planning suggests that an integrated approach ultimately will be more successful and more gratifying to the participants. When a reform plan addresses all three of these areas in an integrated manner, the planners should acknowledge the plan's complexity by establishing realistic objectives in terms of "time to criterion" and available resources.

Build on established priorities and directions.

> ...change strategies rooted in the natural networks of teachers—in their professional associations—may be more effective than strategies that adhere solely to a delivery structure outlined by the policy system.

McLaughlin suggests that professional associations of teachers *screen* change strategies that are developed or proposed by researchers, policy makers, and educational "experts." Through various processes, they test new ideas against the realities of the classroom, identify those that meet a range of criteria—including practical considerations—and endorse (validate) the best ideas by incorporating them in their standards or guidelines. Some associations also support the adoption of these ideas, through publications, workshops, or other means.

Planners and decision makers, as well as university–school collaborators, should acknowledge such contribution of the professional associations of teachers and either follow their recommendations or seek to influence their assessments of new approaches.

McLaughlin notes that the professional associations may be "more open to the involvement of new institutional actors and promising organizational connections." Presumably, this means more open than individual teachers and administrators to university–school collaborations. Professional associations could help to advance university–school collaborations by, for example, studying the factors that maximize their effectiveness, recommending guidelines for collaborative activities, and endorsing collaboration as part of strategies for strengthening schools.

Look beyond removing obstacles to the enabling of effective practice.

> ...an important lesson of the past decade is that removing constraints or obstacles does not by itself ensure more effective practice.
>
> A focus on enabling practice within the presence of existing constraints highlights the conditional, mutually reinforcing, and contextual nature of factors that support effective teaching.

The reduction or removal of obstacles to improved content and process should be included with efforts to strengthen educational programs, but these programs should include the addition of positive factors, and should not be limited to the removal of negative factors. McLaughlin suggests that factors that enable effective practice include the following:

- shared mission and schoolwide goals;
- supportive leadership at the site;
- regular feedback about teachers' performance;
- teacher participation in curriculum decision making;
- collegial interaction; and
- multiple opportunities for teachers' professional growth.

Site and district administrators could influence these factors most directly, but university collaborators could act to support and augment administrators' initiatives. For example, administrators could increase opportunities for collegial interaction by arranging teaching schedules to provide common prep periods for teams of teachers. University faculty could enhance those opportunities by joining in discussions during those prep periods and helping to develop academic alliances that convene outside of school hours. One challenge involved in academic alliances is to relate their activities to the school's or district's strategic action plan (discussed above).

McLaughlin concludes his discussion of the policy implications of this research by underscoring the contrast between "top-down" and "bottom-up" strategies:

> Finally, this perspective, which moves from understanding policy implementation to enabling effective practice, underscores the essential contribution of teachers' perspective as informants and guides to policy. We have learned that we cannot mandate what matters to effective practice; the challenge lies in understanding how policy can enable and facilitate growth.

As we have noted in the preceding comments, McLaughlin's suggestions may have been intended to influence state and federal policies to improve educational practices, but they also are useful as guides for university–school collaborators. Policy makers, distant from the classroom, should avoid mandating changes, and should focus on enabling effective practice. Similarly, educational theorists should avoid pontificating about "what works," and instead bring their knowledge into constructive, searching discussions with the classroom practitioners, and join them in the continuing search for "what works." With this suggestion, we again encourage the development of truly symbiotic collaborations among educators at the university and school levels.

If collaborators are seeking institutional change, they should consider McLaughlin's insights and those of others studying the processes of change, and shape their activities to take full advantage of what is known about these processes. The planning stage of a reform program should include substantial thought and discussion—with school and university teachers participating—to build the foundation for a successful collaboration.

The Future

Despite its title, this section does not offer a prediction of the future of university–school collaboration, or even an extrapolation of present trends. Such endeavors might be interesting, but they would contain little of substance.

Rather, this section presents a key chapter from *School–University Partnerships in Action*, by John Goodlad and Kenneth Sirotnik, in which the authors present "a cautiously optimistic review of the short history to date of the social experiment. . . ."

Goodlad and Sirotnik discuss four categories of issues and problems in university–school collaborations, in subsections titled, "Merging the Two Cultures: A Productive Tension"; "Developing Trust and Ownership"; "The Change Cycle"; and "Developing a Common Agenda." In each case, they present tough-minded proposals.

Regarding the different cultures of school and university, Goodlad and Sirotnik propose basic reform in the relationship between schools and schools of education, to become more like—or better than—the relationships that exist between professional schools and the professional fields they serve. We invite the reader to compare this bold proposal to the perspective offered earlier in this book by Brookhart and Loadman.

Addressing issues of trust and ownership, the authors make the following assertion:

> A necessary condition pertaining to all partnership activities is not yet, we think, fully understood and respected: committees and task force members are *not* making plans and recommendations for others who will then decide what to do with them: instead, they are making plans and recommendations for *themselves*.

The subsection on issues of change focuses on the preconditions of change: involving teachers and site administrators (see McLaughlin's paper, earlier in this book, for additional thoughts on this point) and establishing symbiotic relationships among the leaders of the collaboration and between these leaders and the teachers.

The final category of problems addressed by the authors is the difficult but essential task of developing a common agenda. They call for dialogue: "A basic assumption of school–university partnerships is that representatives of the two cultures will engage in the inquiry essential to diagnosis and amelioration."

The authors conclude that it's still too early to identify what works and what doesn't work in university–school collaborations, or their effectiveness in dealing with the "tough issues" in education. Finally, they offer seven "highly speculative observations on organizational structures, change processes, and the prospects for significant educational improvement." We discuss those observations in the commentary following this section.

In reprinting this chapter from *School–University Partnerships in Action,* we have retained the authors' references to earlier chapters in that book, both to retain the flow of their presentation and to entice the reader to seek out that useful publication.

The Future of School–University Partnerships

John I. Goodlad and Kenneth A. Sirotnik

Chapter 1 [of *School University Partnerships in Action*] described the rationale for and the beginning of a large-scale social experiment: the deliberate joining of school districts and their schools with universities for the simultaneous improvement of schooling and the education of educators. Janus-like, the chapter looked backwards to earlier examples of relationships between higher and precollegiate education and forward to expectations for 14 school–university partnerships linked together in the National Network for Educational Renewal (NNER). In succeeding chapters, the history, problems, and possibilities of five selected partnerships (four of them members of the NNER) were reflected upon and recounted from the vantage point of people intimately associated with the efforts. This chapter, a cautiously optimistic review of the short history to date of the social experiment, benefits from these five case studies as well as from personal experiences with the other partnerships.

Reprinted by permission of the publisher from Sirotnik, K.A. and Goodlad, John I. (Eds.). *School–University Partnerships in Action: Concepts, Cases and Concerns.* (New York: Teachers College Press, © 1988 by Teachers College, Columbia University. All rights reserved.), Chapter 10, pp. 205-225.

By the time this manuscript appears in print, all of these partnerships will have moved on to another phase in the change cycle. Consequently, it is important for this chapter to draw from experiences in them to date in such a way as to assist others seeking to draw schools and universities more closely together. The body of data available to the writers includes preceding chapters, visits to those partnerships constituting the NNER, individual and group meetings with executive directors, correspondence and telephone conversations with a variety of individuals involved with these partnerships, a miscellaneous array of reports and newsletters, and a round of correspondence with eight deans who responded to a series of questions raised with them regarding the school–university partnership to which each had made a commitment regarding his or her school or college of education.

There are, it appears, relatively common sets of issues and problems manifesting themselves in different ways. Some grow out of distrust between inhabitants of two different cultures—particularly distrust of the motives of university people on the part of school people. Some emerge out of the markedly different demands, expectations, and reward systems of the two types of institutions. Other problems and issues arise out of the larger cultural context in which schools and universities coexist—a context which separates university professors from public school teachers in a two-tier system of status and prestige, for example. The differences between schools and universities may be so great that establishing collaboration as a permanent way of life rather than as a series of projects may not be possible.

There are troublesome organizational and structural problems in school–university partnerships. These potential problems range from meshing regularities such as annual and daily work schedules to creating a governing and managing structure that represents the best interests of all participants. There are ticklish issues of authority and responsibility. Who is to determine whether a new program developed by a partnership is to be implemented? Do collaborative task forces just make recommendations to others who hold the power? If so, will not interest in collaborating soon disappear? Is there a point at which charismatic leadership becomes dysfunctional for the long-term interests of the partnership?

There are also both the classic problems of effecting change and the unique manifestations of these problems in the processes of schools and universities coming together in areas of mutual self-interest. High among these problems is getting beyond simply conducting old business better to conducting old business differently as well as better and at the same time redefining the basic educational functions of both sets of institutions. The gap between "unsatisfactory" and "excellent" in education is not necessarily closed simply by doing better. Some things must be done quite differently; others not at all.

The data already available on the early history of the partnerships noted above have produced evidence of all of these problem areas, issues, and more. Consequently, they can be addressed in rather concrete ways.

First, however, it is important to argue once again, from a somewhat different perspective, the case for the kind of collaboration proposed in Chapter 1[1]. Even though what is transpiring in school–university partnerships can be thought of as social experiments and, therefore, in a way, the testing of a set of hypotheses, we argue now for the necessity of such collaboration *as a postulate.* In effect, we find ourselves closely aligned with Conant's (1964) explanation as to why researchers are willing to spend lifetimes testing hypotheses: because they believe in them as principles.

After further discussion of the concept as a postulate, we turn to some of the issues and problems now causing or likely to cause difficulties for those embraced by symbiotic school–university partnerships. In concluding, we take the view that school–university partnerships may be an idea whose time is come—*if* the two cultures are able to go beyond cooperation to fusion.

Merging the Two Cultures: A Productive Tension

Chapter 1 cites McNeill's contention that significant human progress can be traced again and again to the interpenetration of two cultures, one with the other. To the extent that one culture completely loses its identity, the productive tension between interacting cultures is lost. That chapter stresses the necessity of differences among institutions joining in a partnership and the necessity of retaining these differences. There is little to be gained if the characteristics of one accurately mirror those of all others. The differences must be appreciated by the partners even when they produce abrasions, as they undoubtedly will. As Schlechty and Whitford point out at the end of Chapter 9, public schools would find it necessary to invent what the university can provide if the latter were not part of an organic collaboration.

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[1] "A school–university partnership represents a planned effort to establish a formal, mutually beneficial, interinstitutional relationship characterized by sufficient commitment to the effective fulfillment of overlapping functions to warrant the inevitable loss of some present control and authority on the part of the institution currently claiming dominant interest," from Goodlad, J.I. School–university partnerships for educational renewal: rationale and concepts. In Sirotnik, K.A. and Goodlad, J.I. (Eds.) (1988). *School–University Partnerships in Action: Concepts, Cases, and Concerns.* New York: Teachers College Press, Teachers College, Columbia University. pp. 25-26.

Educators in the schools are capable of coming up with increasingly better ideas about their work and workplace, particularly if they have opportunities to observe and converse with co-workers in their own and other settings—something the partnerships described are designed to promote. But the record of so doing and then implementing radically different ways of conducting business is not impressive. This limitation is noted in the discussion of the League of Cooperating Schools in Chapter 1. Blame this shortcoming on bureaucratic structure and rigidity, if you will, but there are few signs that such will go away. Bureaucracy is a condition to be worked with and around.

Getting beyond performing familiar tasks better is not easy. Wooden boat builders improve their craft by observing and interacting with one another. But they are (and were) unlikely to consider the possibilities inherent in fiberglass rather than wood. Indeed, many wooden boat companies saw fiberglass as a threat and went bankrupt fighting against its use. But the buying public on whom they depended was offered a choice.

If school personnel do not consider new ways seen by others to be better or worthy of attention and renew their institutions accordingly, either alternative ways will be thrust upon them or new institutions and educational delivery systems will emerge. Such already has occurred. Here is where the university is an obvious partner—an institution charged with the responsibility of being constructively critical of our civilization and, through inquiry, of providing authorized opinions as to how human affairs might be conducted differently and better. As Buchmann (1987) proposes, the action-oriented culture of the school and the reflection-oriented culture of the university stand to benefit from interpenetration.

The university has little to offer such a joining, however, if its faculty members create, in their ignorance of schools, some fictional characterizations of the precollegiate educational world. Schools of health must be linked with public health, schools of agriculture with agricultural productivity, schools of social welfare with social well-being, schools of theology with the role of religion in human experience, schools of education with the enculturation of our people and the cultivation of the intellect in our educational institutions. But the implied connection between the scholarly endeavors of professors of education and the often-messy enterprise of educating all of the children of all the people appears not to mirror accurately the culture of all schools of education.

... the action-oriented culture of the school and the reflection-oriented culture of the university stand to benefit from interpenetration.

Near the beginning of this century, John Dewey urged our professional forebears in the newly emerging schools and colleges of education to seek lessons from "the matured experience" of other professional callings (1904, p. 10). Law and medicine, for example, were well on their way to carving out their own niches, making certain not to be dominated solely or perhaps even primarily by the academic criteria of the arts and sciences departments. Dewey appeared to be suggesting a somewhat parallel role for schools and colleges of education.

Several decades later, however, Robert M. Hutchins (1936), while president of the University of Chicago, made it abundantly clear that communicating "the practices of the professions to the young" (p. 111)—whether of law, medicine, school teaching or administration—had no place in the university:

> The prospective lawyer would have exactly the same general education as the clergyman and the doctor. He would study metaphysics, because without it ethics, politics, and economics are meaningless.... He would also study the empirical and historical knowledge of society, the history of law and legal institutions, economics and economic history.... He would

> gain some knowledge of the physical world.... Anything further that he needed for the practice of his profession, such as familiarity with the roles of a particular jurisdiction, with methods of using digests and reports, with drafting legal documents, with writing briefs, or with the tricks of the trade, he might acquire in a legal institute attached to the university (p. 114).

Hutchins made it equally clear that those who staffed such an institute, whatever the profession, would have little or no voice in matters affecting the conduct of the university and the content of its work. It was characteristic of Hutchins to view compromise from a "plague-on-both-your-houses" perspective. He saw the university, as he conceived it, to be endangered by the intrusion of vocationalism. Simultaneously, he conceived such a university as inhospitable to the technical needs of professionals and, therefore, as not being fully capable of serving the professions. For him, then, a solution involving compromise was no solution at all.

But Hutchins' tidy view of the university was not to prevail. Three decades later, Clark Kerr (1963), in the Godkin lectures at Harvard, found it necessary to coin the term "multiversity" to connote the complex institution that the University of California, over which he presided, had become. And what both the Berkeley and Los Angeles campuses had become so also had all of the "flagship" public state universities and dozens of other institutions labeled "university." Today, a popular view is that the 10 to 15 professional schools on many campuses and the professionalization of the academic departments provide the direction and the driving force of the modern university.

Hutchins may well have been right. Both the university and the professions might have been better served by the former eschewing vocationalism and professionalism while hewing to a strictly liberal, general education, and the latter establishing institutions joined to but not of the university—as in a partnership. (Hutchins was vague on the organizational arrangements.) There would be today no need to create school–university partnerships; such would be redundant. An institute of pedagogy (or education) would be the bridge connecting the practice of teaching or administering with its conceptual and theoretical underpinnings. Dewey would have liked such an arrangement, we think. Yet Dewey probably was perceptive enough to note that the more mature professions were busily seeking to get the best of both worlds—to be part of the university and yet relatively independent of it. He wanted as much for a school or college devoted to preparing teachers for our children.

The relative success of schools such as medicine, law, and dentistry in achieving considerable autonomy within the university and the general failure of schools of education became particularly apparent to the first author while chairing a committee of the University of California (University-wide Program Review Committee for Education, 1984). For the former schools, the committee found accommodations in the academic criteria for faculty advancement calling for recognition of clinical and professional demands. We found no such accommodations in the written criteria to be employed in evaluating education professors; indeed, the criteria were precisely those used in evaluating professors in the arts and sciences departments. In our discussion of this finding, a professor of political science on our committee posed a paradox: A graduate student or faculty member in architecture and urban planning is rewarded for designing a new school building; but a graduate student or faculty member in education would not be rewarded for designing the educational program to go into it!

Whether or not Hutchins was right, the multiversity prevails. The challenge to the unit charged with the study of education and the education of educators is to relate effectively to the practice of education in elementary and secondary schools, regardless of whatever other functions such a unit might serve. To do this effectively, there must be both accommodations within the university and permanent linkages with the schools.

We are proposing, then, not just a project in the reform of schooling or teacher education, but a way of life: a joining of schools and schools of education in a permanent partnership similar to those now imperfectly forged between most other professional schools and the settings where their graduates intern and practice. Like any marriage, the relationship will be marked by tensions, some of which will threaten to tear it apart. The more theory and practice fuse in both preparation programs and school settings, the more productive the tension and the more viable the educating in both schools and universities will be.

Developing Trust and Ownership

The tensions that emerged early in the history of school–university partnerships, some described in preceding chapters, are more a question of developing trust than of solving tough problems of mutual interest. Lack of initial trust stems in part from the unfamiliar relationship between university-based and school-based people called for in the partnerships. This is exacerbated by the unknowns. What is to be gained? What is to be given up? What turf, if any, will be ours to control? Such questions do not always remain below the surface. And the way they sometimes manifest themselves does not immediately contribute to trust.

In the early beginnings of one partnership, several school administrators hotly resisted the idea of involving university professors in the affairs of their schools. "Professors either lecture to us or rework our problems so that they no longer are recognizable," said a school principal. Months later, when a professor was trying to back away from a full and equal partnership with schools, a superintendent spoke sharply, "You had better not; if there's word of a funeral for colleges of education or schools, rest assured that it won't be for the schools."

Inherent in the very nature of universities is a certain detachment, even mystique, that breeds some suspicion and distrust on the outside—the "town and gown" syndrome. Most teacher-preparing institutions recruit their students from nearby and place them as teachers in local communities. The student-professor relationship persists for years. Often, these same individuals come back to the university for graduate studies and once more are "students," sometimes of their former professors. And now, these professors are to treat them as equals in a school–university partnership? Come now!

This problem of institutions (and individuals) needing to be truly equal partners came sharply to the fore early in the Brigham Young University–Public School Partnership's task force on the principalship. (See Chapter 6.) Reflecting later on their early experiences, teachers and principals in this group were candid. Initially, they were reluctant to speak up in the company of professors. They were appalled at the time it took to get any agreements, especially among the professors. Minutes of meetings reveal the dominance of the latter. Thanks in large part to the patient, low-key leadership of the chair, the school-based members were drawn into the dialogue, agreements emerged, decisions were made. The plans that emerged and the new program for the preparation of school principals implemented during the 1986-1987 year were as much the work of teachers and principals as of professors.

A deep-seated concern, particularly of those in partnership schools working on committees and task forces, but also a view shared by some professors whether or not they are involved in collaborative activities, is that their hard work will end up in recommendations to others with veto power. A necessary condition pertaining to all partnership activities is not yet, we think, fully understood and respected: committees and task force members are *not* making plans and recommendations for others who will then decide what to do with them; instead, they are making plans and recommendations for *themselves*. But it is not easy to think and act in this way. Making plans for others is indigenous to the education enterprise, just as it is in other areas of human affairs. It is all too easy to be unrealistic and irresponsible when someone else is to carry out the results of a committee's work. Conversely, it is all too easy to sidestep such results when the recommending body has no authority over those for whom the recommendations are intended and no responsibility for implementing them. Little is accomplished in either case. There is no point in perpetuating what is obviously futile.

Partnership working groups are not created to recommend to others. They are engaged in redesigning programs and practices, using their best judgment. This implies a great deal regarding both the membership and the authority of working parties involving school and university personnel. We are confident that the implications are not yet fully understood by those now involved. For example, we would wager that some professors of educational administration now joined with school personnel in rethinking preparation programs in this field are relaxed in the belief that they themselves will veto recommendations coming from the group when they are brought to the total faculty. The consequences would be devastating to a school–university partnership.

In the Brigham Young University-Public School Partnership, there is no doubt that trust on the part of school-based persons working on the principalship task force advanced markedly when the program they helped design became a reality. And, no doubt, a positive message was communicated rapidly to those involved in other working parties. The best guarantee of trust and willingness to participate is to see the results of one's efforts built into some part of the total enterprise. The uncertainties of investing time and energy are then changed into the satisfactions of ownership.

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The Change Cycle

Six years of experience with the League of Cooperating Schools (see Chapter 1; Bentzen, 1974; and Goodlad, 1975) impressed upon us the nature of a change process that differs markedly from the highly ordered, linear one often perceived as the one that works. The tidy model of change for research and development, particularly as it was employed to guide federally funded projects in the late 1960s, has been criticized by many (e.g., House, 1974).

We too observed a much less systematic approach on the part of persons in schools endeavoring to grapple with improvement. This somewhat erratic, stumbling course is not easily documented in the literature; but the complexity comes through in the five stages observed by Lieberman and Shiman (1973):

- First, people talk about the possibility of bringing about some kind of change within the school.... The "tell us what to do" syndrome is rampant.... This stage is clearly Lewin's "unfreezing."
- Activity ensues.... Usually a few people get excited about adopting a change, and with enough support they do it.
- Out of such activity, teachers begin to ask questions.... "Is this better than what I did before?" Discomfort is great at this time.

- The whole program begins to look shabby.

- The large philosophical questions are asked. Teachers begin to deal with goals for the first time (p. 52).

This last point is worth noting. Most reform models and efforts, including those criticized by House, begin with a statement of goals. Yet, as discussed in Chapter 8 and in the literature on organizations referenced therein, goals are more likely to emerge from human endeavor than to direct it.

To some extent, perhaps, the excessive setting of goals and refinement of those goals into precise objectives, so characteristic of the education enterprise in recent years, has caused educators to become weary, even skeptical of the process. In most of the partnerships, however, there has been considerable tension between the desire on the part of some participants to keep the dialogue open, thus delaying closure on a specific agenda, and the desire of others to get considerable closure on an agenda of relatively specific topics.

The latter occurred within the governing body of the Puget Sound Educational Consortium (PSEC) at one of its earliest meetings. At the suggestion of members of the group, there were individual conferences with each member of this body to assess areas of interest. Agreement on a list occurred at the first presentation of the summary that was prepared following these meetings. It is fair to say that there were no lengthy discussions of alternatives based on a careful analysis of national or local needs.

On the other hand, as Keating and Clark point out in Chapter 7, the formal creation of the PSEC was preceded by considerable discussion of critical issues by district and university personnel: The Educational Leadership Seminar, beginning in the summer of 1984, provided forums for reading and dialogue. Rarely, in our experience, have so many educators from so many districts and a university engaged so intensively in intellectual activity that was almost completely disengaged from goal-setting and academic credits. To a considerable degree, a norm of professional reading and dialogue within and across districts and across school–university lines had been in the making (and has continued). Presumably, the discussions regarding the agenda were influenced by what had transpired during the previous year.

But the urgency to get closure on an agenda is influenced significantly by other factors. First, superintendents perceive themselves not only to be in a decision-oriented role but also in a setting demanding a wide range of quick decisions. There is not time for much reflection—which is an argument for the role of university people in tempering these circumstances. Second, superintendents, on behalf of their districts, make a rather substantial financial commitment ($20,000 in the case of the PSEC) for an uncertain enterprise offering such intangibles as change, improvement, reform, and collaboration. Board members seem not to question the spending of much larger sums on such closely related matters as staff development, but these can be translated, usually, to fit norms and conventions. In a school–university partnership like the PSEC, a new venture not easily described or aligned with convention, there probably was some urgency on the part of the superintendents to identify the kinds of specific activities that could be readily subsumed under familiar rubrics. A task force on "excellence and equity," for example, may not denote specific activities, but at least the words are well worn and even high-sounding.

Herein lies a major problem in change processes. Because the very idea of change (and especially innovation) is threatening, particularly to persons who see themselves well served by the way things are, those involved often perceive a need to stay away from areas of controversy, at least initially. Sometimes, great care is taken to avoid language that too precisely defines the changes intended, especially if this language has been used before to describe initiatives seen as threatening or unproductive in some earlier era of reform. Yet, we know that using language that best fits both the circumstances to be changed and the changes to be effected tends to accelerate the process. Then, avoiding the controversial areas or coming at them very obliquely often means involving valuable human time and energy in matters that may not be worth the effort. Once thoughts of this kind intrude into the work setting, disillusionment and low morale quickly follow. Yet, to tackle head-on those long-standing, intransigent problems of institutionalized education may be to court disaster through the immediate arousal of all the many forces driven to resistance or outright opposition to anything likely to rearrange or replace what now exists.

The mechanism of a school–university partnership may be uniquely suited to getting beyond this critical point of impasse and regression. For example, although the agenda initially agreed upon by the governing body of the PSEC did not appear to be, for the most part, very world-shaking, the working groups addressing the several topics have pushed far below the surface of each, revealing connections to issues of major importance. This may prove to be the rule rather than the exception when action-oriented and reflection-oriented individuals join in seeking to define and understand a problem. Whether this joining will then result in action involving a continuation of this inquiry remains to be seen.

This issue returns us once more to questions of involvement and ownership. We see in the description of the Southern California Partnership (Chapter 5) an effort—problematic, but not without successes—to extend involvement and ownership beyond the governing body and, indeed, expand the membership in this group to levels of responsibility in addition to top school and university administrators. The momentum of the group of school principals and second-level district administrators was sufficient to keep the partnership alive through the loss of its initial university partner and marriage with another. Extending involvement to teachers and faculty, in particular, is a virtually universal concern within all partnerships.

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Perhaps it was Paul Heckman's experience with the problems of extending this involvement in the Southern California Partnership that led to a different approach in the genesis of the Southern Maine Partnership. In his role as executive director of the latter, he encouraged meetings that simultaneously involved superintendents, principals, and teachers. He was careful to avoid a pyramid-like structure, with a governing board of superintendents and the dean of the college of education directing all activity from the top. Instead, he sought activities that involved simultaneously the dean, teachers, professors, principals, and superintendents, pushing all the while for those most obviously responsible and best able to make decisions to have the authority to make them. Consequently, the several superintendents made decisions regarding paying the costs of activities that had been cooperatively agreed upon as desirable. Similarly, the necessity of freeing teachers from restraints limiting their teaching decisions was addressed not just by teachers or by administrators but by both groups simultaneously. Heckman modestly attributes some of the apparent success of this approach to the relatively small size of the partnership, but this way of proceeding appears to be applicable to even very large partnerships.

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Yet it is also apparent that the approach to involvement of all levels of the schooling system did not assure participation by university personnel. The hope was that professors, instead of coming to the schools to make speeches or report on their research, would be drawn into ongoing work because their interests would be tapped and they would be viewed as having something to contribute. There is no evidence at this time, however, of professors in the University of Southern Maine being more involved than are professors in other university partnerships. Indeed, the dean sees greater involvement as a necessity and the lack of it as a serious problem.

Professors tend to be specialists, not generalists. One might expect them to be most comfortable in working on certain kinds of problems (teaching, administering, counseling, etc.) with certain educational professionals (teachers, administrators, counselors, etc.); they may less readily perceive how to become productively involved in more long-term, multilevel school improvement processes. Consequently, substantial participation by university faculty may be an eventuality to be anticipated once the agenda of educational improvement is reasonably well defined.

On the other hand, it has been our experience in at least several partnerships that three or four professors have been willing to participate initially in less well-structured inquiries that are likely to persist for some period of time. This reinforces the point emphasized by Lieberman (Chapter 3) and Heckman (Chapter 5) that coordinators need to assume a brokering function, capitalizing quickly on common interests as they emerge in the school–university collaboration.

The promising principle at work here is that all levels of a system, whether large or small, characterized by bureaucratic structure and behavior, function as in interacting ecology (Goodlad, 1987). In its ideal form, this ecological model would eliminate the need for one level to seek the "permission" of another after the necessary deliberations had taken place; all of those levels necessary for implementation would be party to the deliberations. Consequently, it becomes the responsibility of all involved to effect the implementation process, whatever its focus. But the problem of effectively including the university in the ecology still remains, as Schlechty and Whitford astutely point out in Chapter 9.

In most, perhaps all, of the school–university partnerships with which we are familiar, the potential of this multilevel approach rests with the committees, task forces, or working parties now functioning or being established. The obstacles are likely to be the chronic ones arising out of the need to hold on to power and to protect turf. Those involved must come to understand that power is not finite. Sharing it usually creates more to spread around. Crossing over turf boundaries requires belief in that third characteristic of a symbiotic partnership: Satisfaction of the self-interests of other collaborators in a common agenda is essential to the satisfaction of one's own self-interests. Superintendents, for example, must come to see that a first-rate school system requires a very broad scope of curricular and instructional decision making space for teachers. Professors of educational administration, to cite another group, must come to see that a first-rate preparation program for school principals requires close collaboration with people in the schools. Eventually, educators in schools and in universities, aside from their specific interests, must come to own the common agenda—the "organic relationship" proposed by Schlechty and Whitford. Such thinking is hardly revolutionary in character, but it has not been abundantly present in the educational enterprise.

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Developing a Common Agenda

An unsettling observation about schooling is that educators do not commonly engage one another in serious dialogue about their enterprise. Lortie (1975) has provided us with a sobering picture of the isolation of teachers from one another. But the problem extends far beyond teachers and, it appears, the isolating effects of physical space arrangements. In general, principals do not talk about their problems with other principals (Goodlad, 1975), and superintendents keep their professional thoughts, aspirations, and difficulties very much to themselves. No doubt, the pyramid-like structure of the system contributes to the isolation of those at the top, whether in a school or in a district. Moreover, those who have spent considerable time in universities—in colleges of education, for example—know only too well how the very same phenomena of isolation and closed communication are manifest in the same, if not a greater, degree.

One of the most important concomitants of a school–university partnership may be the stimulation of dialogue, not only between school and university personnel as intended, but among educators within these institutions who are not ordinarily accustomed to engagement beyond the niceties of formal communication. The possibilities for sharing knowledge and expertise clearly are envisioned by Sinclair and Harrison in the goals of the Massachusetts Coalition for School Improvement (Chapter 4). Indeed, the concept of using people inside the Coalition as resource persons in all partnership activities appears to be an operating principle. The school as the unit of change provides the setting where, potentially, the intellectual input of all actors is to be integrated into the decision-making process.

There is no doubt that the effort to join school districts and the two universities in both the Metropolitan School Study Council (Chapter 3) and the Southern California Partnership (Chapter 5) provided the superintendents with settings in which the discussion of significant educational trends, issues, and research findings relative to their work came to be expected and appreciated. As one superintendent in the latter expressed her satisfaction: "I would consider the partnership worthwhile if I received no further benefit than these stimulating sessions with my fellow superintendents." Similar views were expressed by secondary principals from a dozen districts in the Puget Sound Educational Consortium (Chapter 7), meeting monthly, as they had never met before, to address problems of mutual concern. Most of the executive directors of the school–university partnerships in the NNER have noted this kind of benefit relatively early in the history of the collaborative endeavor.

Schlechty and Whitford's critical appraisal of school–university collaboration (Chapter 9) suggests a necessary stage beyond the recognition in a symbiotic partnership that satisfaction of one's own self-interests requires the simultaneous satisfaction of the other partner's. Something resembling a new, organic, relationship combining features of the other organisms (institutions) must result from the collaboration. In effect, the culture of the school and the culture of the university go beyond interaction; they merge. Both are changed with the merger; both retain a large part of their independent identities; both share the creation of something new. But the nature of these synergistic processes and their outcomes is not at all clear. They constitute, of course, the major unknowns and challenges in the social experiment.

Chapter 1 advances the rather obvious proposition that the extension of the common school upward to include secondary education and outward to include large numbers of young people who lack support from other institutions, particularly from a fully intact family, has created chronic problems. Although, at the root, these problems remain essentially the same, their manifestations change over time. The necessary agenda of educational improvement requires that these manifestations are correctly diagnosed as leading to a deeper root and, therefore, are worth the commitment of human time and resources. A basic assumption of school–university partnerships is that representatives of the two cultures will engage in the inquiry essential to diagnosis and amelioration.

However, if the press to get early closure on any agenda is very strong—because, for example, a school board expects early results, perhaps in the form of higher achievement test scores—the necessary dialogue may be circumvented or aborted. In one instance, a district dropped from a partnership just as it was beginning, on the grounds that no "returns" were visible. In another instance, an agenda with accompanying task forces was put together in a matter of months and then summarily abandoned. In contrast to that experience, in another instance, a multilevel dialogue with some input from consultants was sustained for a year without formal agreement on any agenda. One partnership has been driven for several years by several large areas of common interest agreed to by its governing board during the first weeks of its existence. In almost every instance, there has been a search for an agenda specific enough to bind participants in a common enterprise but general enough to allow for individuality and creativity.

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It is instructive to note that the 14 school–university partnerships constituting the NNER experienced a pressure beyond that of their own members: namely, the mission statement of the NNER. (See Chapters 1 and 8.) The problems of accommodating the interests of each partnership to the NNER agenda laid out in the mission statement in many ways paralleled those of determining a single partnership's agenda. The mission statement proved to be too general for some, too specific for others. Interestingly, extensive dialogue among the executive directors regarding the difficulties of effecting change, current activities within their partnerships, and anticipated areas of effort revealed extensive early overlap in the agenda of partnerships and the mission statement of the NNER. It is difficult—indeed, impossible—to determine how much this mission statement played the "alternative drummer" role in guiding the dialogue toward agreement on a dozen themes involving both process and substance. It is reasonable to suppose that the effort to assume considerable ownership of a common agenda was informed by both the purposes of the NNER and considerable sensitivity on the part of the executive directors and their partnerships to the critical educational problems of our time: the manifestations of deep, almost intractable, difficulties of educating all children, youth, and their teachers.

Concluding Observations

It is too early in the social experiment to draw reasonably definitive conclusions about what is working and what is not working and, certainly, about the same effectiveness of school–university partnerships in addressing the tough issues motivating their creation. But it is possible and it may be useful to pass along to others some highly speculative observations on organizational structures, change processes, and the prospects for significant educational improvement.

First, the role of executive director may prove to be crucial. Clark (Chapter 2) borrows from Sarason, Carroll, Maton, Cohen, and Lorentz's (1977) description of Mrs. Dewar in reflecting on this leadership role. A primary theme in Lieberman's account of the history of the Metropolitan School Study Council bears directly on the issue of leadership and "idea championing." Interestingly, the several executive directors in the partnerships that constitute our experience base vary significantly in personality, background, status in their institutions, and so forth. There is no question that persistence, identified by Sarason as an important trait, is crucial. Beyond this, it appears that ability to relate in an open, honest way (to be "authentic," as the concept often is described) to a wide range of groups and individuals, *and to listen,* are important characteristics. One must be able to move readily back and forth between the culture of the school and the culture of the university, to have an understanding and an appreciation of the values of both, and to be perceived as contemptuous of neither. Increasingly, executive directors are learning the importance of being able "to walk both sides of the street."

Just how much the beginnings and development of a school–university partnership depend on the executive director as an "idea" person is not clear. Being deeply committed to a personal agenda for reform may be a liability. Perhaps more important than the promulgation of ideas may be the ability to draw ideas from others and move them into a common agenda and strategies for action. The ability to question and even challenge others without being threatening, to supply information and resources at critical junctures, and to foster the use of relevant data in all inquiry appears to be a productive, though perhaps rare, trait.

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A personal need to stamp a partnership with one's own image appears at this stage to be dysfunctional. The executive director is caught between the need to be a leader, seen as competent and in charge, and simultaneously to be self-effacing, giving the credit to others. This may not be easy for professors in this role who have been highly entrepreneurial, independent, and competitive in academe. There are careers to be made and enjoyed in this new, hybrid position; but many who take it on, whatever their previous roles and successes, may find themselves to be square pegs in round holes.

Second, whatever the governance structure initially established, it will create problems and probably will require later modification. The bureaucratic structure of school districts and universities serves to invite bureaucratic solutions to educational problems even when bureaucracy is part of these problems. When one of the essential goals of improvement is the unshackling of the critical mass of human energy and talent at the base of the pyramid, there is an irony in governance being in the hands of superintendents and deans, as is generally the case in the partnerships. Yet, as discussed in Chapter 1, to sidestep those in these positions of authority is to court failure from the outset.

A conventional solution is to "represent" other groups such as principals and teachers on the governing board. But this is fraught with difficulties. Who picks them? Will they participate collaboratively, or will they try to lobby for the wishes of their respective organized groups?

Whatever the structure and membership of the governing body, there appear to be some minimum essentials for successful functioning. The board or council must be readily accessible to all groups involved. Consequently, the agenda must be open to all, and this is a condition that is significantly influenced by the executive director. Members of the governing board must be alert to the involvement of teachers, professors, and principals, as well as sensitive to board actions likely to discourage participation. The governing council of the Southern California Partnership came close to causing a serious rupture when it became overly zealous in criticizing the report of one of its own task forces. Subsequently, it opened up membership on this body to persons in addition to superintendents and the dean. In several partnerships, steering committees at levels below the governing body are serving to assure broader participation in leadership and the elimination of log-jams in the governance agenda.

How best to govern and administer collaborations that are still in an amorphous, developing stage should continue to remain an open question. Superintendents and deans have many demands on their time; for some, partnership business is not yet central. Yet, for them to be on the sidelines and uninformed ultimately means trouble for the partnerships. Success requires their active interest and participation. But their role must be permissive and encouraging: stimulating grassroots involvement, securing the necessary resources, encouraging new ventures, and so forth. Ultimately, the governance structure must be broadly representative of those upon whom significant educational improvement depends.

Third, the disparity between the rhetoric of expectations and the financial commitment of school–university partnerships raises interesting questions about the future. Unfortunately, the variability among partnerships is not sufficient to provide insights into the effects of small and large budgets. Most budgets are small. A large, cash budget could heighten expectations for early closure on an agenda and quick returns. An imbalance in regard to source (e.g., most of the money from a university or from a grant) could distort both the agenda and the degree of commitment evidenced by some partners.

Clearly, if school–university partnerships are to fulfill the high expectations many of the partnerships hold for themselves, they must increasingly attract resources now committed elsewhere. This observation reinforces another: Partnerships must address the central business of educating children, youth, and teachers. The agenda must not be "projects" around the edges. If new programs are undertaken, they must be seen as pilot efforts intended, once refined, to replace existing programs. The implication here is that the success of partnerships depends on the centrality of their agenda to areas of mutual self-interest and, therefore, their legitimate access to "regular" budgets. A major question at this stage is whether persons in strategic school district and university positions view their partnership in this way. If they do not, then the lofty expectations voiced by many will prove to be empty of significant results.

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Fourth, questions of involvement, participation, and representation must be resolved on shared turf: the individual school, on one hand, and the university's programs for preparing educators, on the other. The concept of "representation" has been abused and misused in education. Although getting principals, teachers, and faculty, as well as deans and superintendents, on the governing board of a school–university partnership is desirable, such does not assure that those best able to make decisions and most likely to be held responsible for their consequences will be given the authority to make them. Merely representing all groups often accomplishes little more than compromise. Members of a governing group must move toward a process that best serves the total enterprise, not merely the special interests of various groups of actors.

This last statement means that there must be a coming together of all the actors on common ground. Children and youth are formally educated in school programs; teachers, specialists, and administrators are prepared in university programs. School-based and university-based individuals preparing educators have a stake in both. Renewing these programs is the work of those who teach in them. The rest of the educational system justifies itself to the degree that it provides support for this process of renewal, with each part contributing to the ecology of the whole (Frazier, 1987).

There is a sense among many of the actors that the success of school–university partnerships will be determined by the degree to which the implied centrality of focus occurs. Several of the deans have said that the danger lies in scurrying about to create "projects," instead of looking carefully for ways to get leverage on conventional ways of conducting schooling and preparing teachers. Some of the executive directors view collaboration between schools and universities as a way to get a different perspective on old problems. But they also view as formidable the difficulty of creating mechanisms through which individuals at all levels of the educational system will grasp the possibilities of getting beyond business-as-usual and will have the time, energy, and motivation required over the long haul.

Fifth, for this time, energy, and motivation to be poured into creating parallel programs is to assure failure. For a host of reasons, too many to examine here, postmortems on reform efforts repeatedly reveal that failure resulted from taking on double burdens—operating the old ship and trying to build a new one simultaneously—and then running out of energy. At one partnership conference, a university professor spoke in frustration of working for several months with teachers on a curriculum project, only to experience absenteeism from meetings and dying enthusiasm.

The teacher who does not wish to teach better and engage students in a richer curriculum is a rare person. But the interface between these worthy desires and reform initiatives almost always is a mismatch. Even at the site level, what principals see as needed usually is not what spurs teachers to accept willingly additional demands on their time. The successful strategy is one that converts pervasive dissatisfaction with existing programs into a belief that change not only is possible but also will produce greater job satisfaction. Once even a small group involved in the program comes to share this belief and experience some modest successes ("get some things on the scoreboard"), changes of a kind and magnitude not initially contemplated become part of the agenda.

The successful strategy is one that converts pervasive dissatisfaction with existing programs into a belief that change not only is possible but also will produce greater job satisfaction.

Sixth, if the necessary mechanisms are to be sensitively nurtured, the partnership must become self-conscious of the change process. Understanding and promoting effective change has been identified as an area of common interest by the executive directors of all partnerships in the NNER. This is an encouraging sign. There is now no need to blunder along, assuming that since change is inevitable it needs no guidance. There is a substantial body of literature on change that reports both theory and research and the implications for practice. Since much of this is relatively recent, many who might assume coordinating roles may only be dimly aware of this work.

Some partnerships already have conducted conferences and seminars on the change process; others are contemplating them. Topics pertaining to understanding and effecting change are showing up in on-the-job training programs and institutes for principals. Increasingly, school–university partnerships must bring these kinds of activities to the attention of their members. This kind of encouragement, designed to make attention to change pervasive, is precisely what partnerships and networks should be best able to do.

Seventh, the ultimate indicators of the success of a school–university partnership are not what gets marked up on the scoreboard, however important short-term accomplishments are as motivators. The nature *and quality of institutional and individual renewal serve as the source for determining evaluative indicators* (See Chapter 8.) If we have learned anything from the decade of educational reform following Sputnik, it is that the installation of innovations is, at best, a temporary, stop-and-go process that requires continuous fueling with promissory rhetoric, money, and fresh waves of proposals and reformers. This is not at all the same thing as renewal, as discussed in Chapter 1 and subsequently.

The enemy of renewal is the quick fix.

In brief, renewal is a process of readying the ship's crew for possibilities and emergencies, changing the compass in the light of new data on rocks and clear passages ahead, taking appropriate action as a way of bringing informed experience to bear in considering further possibilities. The analogy is far from perfect. But it illustrates, in a different context, the process of informed dialogue, decision making, action, and evaluation to be developed in partnership institutions and joint programs.

The enemy of renewal is the quick fix. The quick-fix syndrome surfaces early in almost all efforts to improve education. Perseveration with it and, more often than not, failure to get beyond it is the malaise to be reckoned with, whether in the reform of schools or of colleges of education. For the syndrome's appearance to emerge early in a school–university partnership should be taken as normal, not as cause for alarm.

What is gratifying to date in our experience with school–university partnerships is the widespread expression of the desire to go beyond. Indeed, some of those persons who have been serving in key roles view collaboration among cultures as *the* opportunity to effect the kinds of fundamental changes that so often elude us and that take us beyond practices seeming to become more rather than less entrenched as a result of hapless efforts in the past.

Getting beyond turf problems, calcified reward structures, trivial agenda, already full schedules, and regularities designed to keep things the way they are will not be easy. But the general pressure in the surrounding society for doing much better has rarely been stronger. Unless educators take full advantage of the opportunities presented by our times, they will carry forward memories of what might have been. And those are the saddest memories of all. However, the opportunities for educational renewal are many. Among them, school–university partnerships may be an idea whose time is come.

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Comments on the Future of University–School Collaborations

In our introduction to the section by Goodlad and Sirotnik, we summarized their main points regarding their listing of the "issues and problems" associated with university–school collaborations, and their generally bold recommendations on those points. Evidently, these authors' long experience in this area leads them to conclude that fundamental changes are needed in the relationship between university and school educators.

That perspective is also evident in the seven "highly speculative observations" with which they conclude their chapter. In the following commentary, we consider each of these observations, not to dispute them, but to derive from them suggested principles for advancing collaborations "beyond the handshakes."

The role of executive director may prove to be crucial.

Goodlad and Sirotnik envision the executive director as the guide for collaborative activities. The executive director brings leadership and "idea championing" to the process, and ideally demonstrates persistence, openness and honesty, the ability to listen, and the ability to understand, appreciate, and respect both cultures. Further, the executive director should provide this leadership *without* committing to a personal agenda, serving as the principal "idea person," or taking personal credit for the collaboration's successes.

This would be an exceptional person indeed, one that a collaborative should be pleased to find. Persons with these qualifications are not unknown, to be sure: several such persons are already at work in collaboratives across the county.

Prospective collaborators should heed this advice of Goodlad and Sirotnik, and ask either "who will serve as executive director (perhaps under a different title)?" or "how can we be certain that we do not need such a person, that some other form of leadership will do?"

The hazard we see in this crucial role of the executive director is that the collaborators—who typically will be heavily engaged in their other day-to-day responsibilities—will find it convenient to depend on that person alone to do their thinking, set their directions, take their actions, seek their supplementary funding, and otherwise to take the needed initiatives.

This hypothetical problem is more than imaginary: It exists in many less-than-successful nonprofit organizations, in which the board of directors sees itself as a rubber stamp for the executive director's recommendations, and not as active participants in the work of the organization. The many books and articles that define the board of directors' role in such organizations suggest that board members need frequent reminders that the organization's success depends on their accepting more than ceremonial roles. The same is true of the leaders of a university–school collaborative.

Whatever the governance structure initially established, it will create problems and probably will require later modification.

This is wise counsel: The authors evidently have experienced the agonies of restructuring the governance of a collaborative, perhaps more than once. They advise that the governing body should be accessible to all groups involved, careful about claiming it represents principals, teachers, and others, and maintain a role that is both permissive and encouraging.

This suggests yet another important responsibility of the executive director: to guide the actions of the collaborative's governing board to satisfy such criteria. This involves a high level of awareness of the implications of the board's activities and sensitivity to the ways in which those activities will be perceived by other interested parties: teachers and site administrators, as well as parents and other community members.

If the collaboration's agenda addresses matters of central importance, and does so appropriately, it warrants the allocation of regularly budgeted resources by both participants.

The disparity between the rhetoric of expectations and the financial commitment of school–university partnerships raises interesting questions about the future.

The seeming mildness of this observation might mask the point intended by Goodlad and Sirotnik: that school–university collaborations "must increasingly attract resources now committed elsewhere." In other words, they should draw their resources from funds regularly budgeted to both the university and the school, rather than from external sources (i.e., grants or gifts). This suggests that collaborative activities, to succeed, must carry a higher priority than, for example, a school district's own staff development program.

The funding of most current university–school collaborations appears to consist of grants from federal, state, or private sources, plus the contributed time of university and school personnel. If Goodlad and Sirotnik are correct, this funding model cannot succeed in the long run. It is essential that the participating institutions regard the collaboration's agenda as central to their mutual self-interest, and, accordingly, deserving of "hard" funding.

This proposition must rank high on any list of challenging criteria for effective collaboration, particularly in times of budgetary constraints. But it is self-justifying: If the collaboration's agenda addresses matters of central importance, and does so appropriately, it warrants the allocation of regularly budgeted resources by both participants. Otherwise, we should question the worthiness of that agenda.

Questions of involvement, participation, and representation must be resolved on shared turf: the individual school, on one hand, and the university's programs for preparing educators, on the other.

This observation reiterates points already made in the second observation (above): that the governing body of a collaboration must address the needs of both institutions, and of all the involved persons (notably, the teachers).

For this time, energy, and motivation to be poured into creating parallel programs is to assure failure.

Here, Goodlad and Sirotnik urge collaborations to avoid the pitfalls of "taking on double burdens—operating the old ship and trying to build a new one simultaneously." The wisdom of this observation is clear, and its implications are challenging: The authors propose that collaborative activities should address fundamental changes in the school's program, should (for example) *replace* the existing curriculum, rather than develop a new curriculum while maintaining the old, or *replace* the existing staff development program, rather than augment it with a new, collaborative program.

This perspective, like the others, rings true. If the collaborative activities address issues of mutual importance, and do so in a manner that warrants the allocation of budgeted resources, they should operate on the school's basic program, and not on the periphery of that program.

If the necessary mechanisms are to be sensitively nurtured, the partnership must become self-conscious of the change process.

The authors point to the "substantial body of literature on change," but do not attempt to summarize that literature.[1] Instead, they call upon collaborators to understand and promote effective change, and suggest that collaborations are well-suited to the task of increasing awareness of the change process.

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[1] Dennis Galligani, Office of the President, University of California, and past chairperson of the California Academic Partnership Program's Advisory Committee, recommends the following selections from the literature on change:

Huse, Edgar F. (1980). *Organization Development and Change*, 2nd Edition. St. Paul, Minnesota: West Publishing.

Schein, Edgar. (1985). *Organizational Culture and Leadership*. San Francisco: Jossey–Bass.

In fact, Goodlad and Sirotnik have recommended several recognized principles for guiding a change process to a new condition that is both desired and stable. For example, they emphasize the importance of agreement on goals and the active engagement of the individuals who are most affected by the planned changes. If their recommendations seem difficult to meet, it is because change, however desirable, can be difficult.

The ultimate indicators of the success of a school–university partnership are not what get marked up on the scoreboard, however important short-term accomplishments are as motivators. The nature and quality of institutional and individual renewal serve as the source for determining evaluative indicators.

The authors conclude their "highly speculative observations" with this emphasis on the long-term, continuous process of renewal, as contrasted with a short-term, "stop-and-go" process of installing innovations. They acknowledge the possible motivational value of short-term accomplishments, but characterize the quick fix as the enemy of renewal.

This rigorous criterion, like the others proposed by Goodlad and Sirotnik, could discourage the fair-weather soldiers in the struggle to strengthen our schools—and our schools of education. Both school and university educators are familiar with the need to persist in efforts to achieve change within their respective cultures. They should recognize that collaborative activities also require persistence.

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In this section—and in the book from which this section is taken—Goodlad and Sirotnik have described challenging standards that university–school collaborations must meet, if they are to succeed.

They have not predicted the future of such collaborations, but they have outlined the conditions that must be met if these activities are to advance "beyond the handshakes."

Selected Readings

The Most Practical Information

Clark, P.A., & Hancock, D.O. (Eds.) (1990). *CAPP Resource Manual*. Long Beach, California: The California State University, the California Academic Partnership Program.

The *CAPP Resource Manual* is an extraordinary compilation of "notes, flyers, forms, materials, descriptions, and report excerpts" from twelve curriculum development projects that the California Academic Partnership sponsored during 1987-1990, and related materials by Dennis J. Galligani, Deborah Osen Hancock, and Manuel N. Gomez, et al. A loose-leaf publication of about 450 pages, the manual is a trove of practical information that both experienced and inexperienced collaborators will find valuable.

The manual includes an introductory section on the California Academic Partnership Program, followed by sections on Curriculum and Staff Development, Student Academic Services, Parent/Family Involvement, Partnership Development, Dissemination, Institutionalization, Budget, and Evaluation. Each section contains materials produced by the several CAPP-sponsored projects, providing the readers with actual examples of the ways in which these exemplary projects pursued their goals in these several areas.

According to the manual, "New project directors have found that preparing, implementing, and monitoring the budget is the one task they are least prepared for." The manual's "Budget" section comes to their rescue with narrative advice from CAPP project partners, several examples of actual project budgets, budget justifications, and accounting summaries.

Publications that address the multifaceted world of university–school collaboration through abstract analyses can be interesting, intellectually stimulating, and even valuable, but—especially for the newcomer to project management—the concrete, "nitty-gritty" information in the *CAPP Resource Manual* can be indispensable.

Demonstrations of Qualitative Evaluation, and Their Findings

Galligani, D.J. (1990). *Effective Relationships for School/College Partnerships 1984-87 and Achieving Academic Excellence Through School/College Partnerships, 1987-90.* Long Beach, California: The California State University, the California Academic Partnership Program.

This publication combines two evaluation studies prepared by Dennis J. Galligani, past chairperson of the California Academic Partnership Program's Advisory Committee. Galligani's approach emphasizes qualitative evaluation techniques, and complements the more quantitative approach of CAPP's independent evaluator, Evaluation and Training Institute.

The first study addresses the twenty projects that received CAPP support for the period, 1984-1987. Representatives of these projects provided written responses to a series of research questions developed by Dr. Galligani, and participated in focus group discussions of these same questions. The result is a series of recommendations on ways to

- develop effective partnerships between postsecondary and secondary institutions;
- promote faculty-to-faculty interaction to enhance curriculum;
- utilize unintended project outcomes;
- pursue such objectives as involving underrepresented students, institutionalizing the continuation of such projects, and sharing information about the project;
- evaluate the partnership's efforts; and
- utilize the resources of the funding agency (CAPP, in this case).

Galligani prepared the second study with the participation of representatives of nine projects that received CAPP support for the period, 1987-1990. As before, he prepared a series of research questions (an enhanced version of the questions addressed in the first study) and used focus group techniques to collect data from these experienced partners. The product of this work is a new series of recommendations that echo and amplify the recommendations of the first study.

Specialists in project evaluation often recommend combining quantitative and qualitative evaluation strategies, to ensure that all dimensions of the project are considered, and to gather the maximum possible information about the project. This book provides both an excellent example of the use of qualitative strategies for project evaluation, and the collected insights of several experienced university–school collaborators.

An Inspiring Model for Developing and Managing a Partnership

Gomez, M.N., Bissell, J., Danziger, L. & Casselman, R. (1990).
To Advance Learning: A Handbook on Developing K–12 Postsecondary Partnerships. Lanham, Maryland: University Press of America, Inc.

To Advance Learning documents the experiences of Project STEP, a partnership that includes the Santa Ana Unified School District, The California State University, Fullerton, Rancho Santiago College, and the University of California, Irvine. Project STEP has been eminently successful, as evidenced by the sharp rise (since 1983, when the project began) in the percentage of Santa Ana Unified's high school graduates that goes on to further education. The increase, which would be noteworthy in any school, is particularly impressive because 92 percent of the district's students are members of ethnic minority groups.

The authors of *To Advance Learning* offer Project STEP as "a model for using the partnership approach to bridge [the university and school cultures] and to reduce the hierarchical relationships that have impeded educational cooperatives in general and other partnership efforts in particular." The book provides detailed, practical, authoritative, and very readable advice on each of the following important topics:

- how the literature defines "partnership" and other forms of cooperation and collaboration;
- how to structure and develop a partnership, given a particular context and an underlying assumption of the need for equity in inter-institutional relationships;
- how to define shared goals, resolve conflicting goals, and develop specific objectives and collaborative strategies to advance learning;
- how to establish a core administrative team, and identify and secure needed fiscal and human resources;
- how to develop student academic support programs and build parental involvement;
- how to achieve meaningful involvement of all constituency groups and participants;
- how to evaluate partnership efforts, and communicate effectively for both internal and external purposes; and
- how to sustain partnership leadership and momentum, despite very different "cultures" and relationships within the different institutions.

To Advance Learning also includes a Foreword by John I. Goodlad, nationally recognized educator and leader in the school–university partnership movement; a Prologue by David A. Hamburg, president of the Carnegie Corporation of New York, which contributed support for the development of the book; and an Afterword by Donald M. Stewart, president of The College Board. The extensive appendices include a chronology of Project STEP, descriptions of several projects and organizations that support university–school collaborations, and an excellent bibliography of books and articles on academic partnerships and related topics.

This book should be essential reading for anyone who wishes to establish a large-scale university–school collaboration, such as one that involves all students in a large-enrollment school district. Small-scale projects might have their greatest value as precursors to larger projects, so *To Advance Learning* could well serve as both an inspiration and a guide to growth.

Dedication Tempered by Experience

Sirotnik, K.A., & Goodlad, J.I. (1988). *School–University Partnerships in Action: Concepts, Cases, and Concerns.* New York: Teachers College Press.

As its title indicates, this book addresses school–university partnerships in terms of concepts, five case studies, and concerns. The book contains the perspectives of university-based educators on partnerships: editors Sirotnik and Goodlad are well represented, and eight other experienced collaborators provide thoughtful contributions.

The authors of *School–University Partnerships in Action* take a cautious position regarding partnerships, as the editors state in the introduction:

> ...we hope to demonstrate that the idea of equitable, constructive, and productive partnerships between schools and universities is, indeed, viable—that is to say, viable *enough* to warrant substantial commitment and further investigation.
>
> ...we see the cup of potential for productive school–university partnerships to be at least half full. To be sure, developing and

> realizing this potential will not be without attendant problems and conflicts. One can almost count on a common core of issues that will bear on the quality of inter-institutional relationships.

Despite such qualified endorsements of partnerships, these editor-authors cannot conceal their dedication to the concept, as demonstrated, for example, by Goodlad's "over forty years of thinking about and participating in various configurations of relationships between schools and universities." His extensive experience in this arena, and that of the other contributors to this book, suggests that (a) *School–University Partnerships in Action* must be counted among the most authoritative works on this subject, and (b) since a leading educator has not, after forty years, resolved the "common core of issues" that accompany partnership relationships, newcomers to the field might well count on savoring the process itself.

The present volume, *Beyond the Handshakes*, reprints the final chapter from *School–University Partnerships in Action*, entitled, "The Future of School-University Partnerships." We encourage the reader to study that chapter, which presents the distillation of Sirotnik's and Goodlad's experiences with, and lessons learned from, university–school partnerships. We also encourage the reader to read their book in its entirety, for it provides a wealth of ideas, analyzed case studies, and guidance for current and prospective partners in learning.

A Major Resource for Networking

Wilbur, F.P. & Lambert, L.M. (1990). *Linking America's Schools and Colleges: Guide to Partnerships & National Directory*. Washington, DC: American Association for Higher Education.

Linking America's Schools and Colleges serves to update the AAHE's 1987 publication, the *National Directory of School/College Partnerships*; it will be, in turn, followed by a new edition of the AAHE's partnership directory, which is currently in the planning stage. The first two editions, as the third presumably will be, were based on the results of national surveys of colleges and universities. The surveys invited respondents to provide brief descriptions of their collaborative projects or programs. The authors received 1,400 such abstracts.

The book organizes a selection of 343 of those abstracts in the following parts of the book: Programs and Services for Students; Programs and Services for Educators; Coordination, Development and Assessment of Curriculum and Instruction; and Programs to Mobilize, Direct, and Promote Sharing of Educational Resources. Each of these parts is broken down further into sections that gather similar projects.

All of the projects reported through the survey are included in the book's "National Directory," which is intended to "facilitate sharing of information about school–college partnerships on an institution-to-institution basis." The book also includes a survey form for reporting new partnerships, and instructions for using the National School–College Partnership Database, which can provide mailing labels or reports of projects that meet specified criteria, for a small processing charge.

With this publication, the authors—and the AAHE—provide a rich resource for educators who wish to learn from the experience of others. By examining the "Guide to Partnerships" or searching the "National Directory," prospective partners often can locate one or several existing partnerships with goals or target groups that are similar to those of the project they are planning. By contacting the leaders of those partnerships, the planners could gain useful advice regarding successful strategies and possible pitfalls, and design their own activities to increase the probability of success.

Project planners who wish to build on the experiences of their predecessors should consider dipping into both of two wells: that which contains the general principles developed through a range of partnership activities (as represented in *Beyond the Handshakes* and several of the works cited in this list of selected readings), and that which contains the unique ideas, insights and inspirations gained through like projects (as represented in this book, *Linking America's Schools and Colleges*.)

Also Noteworthy

Atkin, J.M. & Atkin, A. (1989). *Improving Science Education Through Local Alliances.* Scotts Valley, California: Network Publications.

The authors describe alliances between schools and a variety of partners: universities, museums, corporations, and "third party agencies" for the improvement of science education. They focus on potential problems in the durability of such alliances, and the quality of science instruction that they support, and offer recommendations based on successful partnerships.

Hancock, D.O. (1989). *Partnership Resource Guide, 1989.* Long Beach, California: The California State University, the California Academic Partnership Program.

This booklet presents information on the California Academic Partnership Program and its projects. It can be useful to California educators interested in submitting proposals for CAPP grants, and educators and legislators in other states interested in establishing programs on the CAPP model.

Schwartz, H.S. (Ed.) (1990). *Collaboration: Building Common Agendas.* (Teacher Education Monograph No. 10). Washington, DC: ERIC Clearinghouse on Teacher Education.

This book presents a compilation of papers presented at the 1989 annual meeting of the American Association of Colleges for Teacher Education. The book's principal sections are as follows: The Nature of Collaboration; Implementation Strategies: Policies and Procedures; Role Relationships/Leadership; Context Variables; and Model Programs.

Task Force on Achieving National Goals. (1991). *Higher Education and School Reform: Creating the Partnership.* Denver, Colorado: State Higher Education Executive Officers.

In this report, SHEEO's Task Force on Achieving National Goals "calls upon each state to develop and implement a plan of action for school–college partnerships targeted at educational improvement" that addresses eight specific goals that respond to the national goals adopted recently by President Bush and the nation's governors.

Sosniak, L.A. (1989). *Partnerships With a Purpose: A Case Study on Curriculum Development and Delivery Through School–College Collaboration.* New York: College Entrance Examination Board, College Board Publications.

This report describes the development and implementation of curriculum work by two projects supported by The College Board's Educational EQuality (EQ) Project Models Program for School–College Collaboration and analyzes lessons learned from the two projects.

Van de Water, G.B. (1989). *The Governance of School–College Collaboratives: Lessons Learned from the EQ Models Program.* New York: College Entrance Examination Board, College Board Publications.

The author identifies ten "governance characteristics of successful collaboratives," analyzes the governance structures of 17 projects participating in the EQ Models Program, and reports on 47 responses to a "governance survey," and presents detailed descriptions of the governance of The Commonwealth Project and Project STEP.

Beyond the Handshakes

III

Case Studies: CAPP'S Model Partnership Programs

Outcomes and Issues of the 1990-1991 CAPP-Eisenhower Project: Partnerships for Staff Development in Science and Mathematics

Carolyn S. Cates

Part I. Overview of the CAPP-Eisenhower Project

In February 1990, the California Academic Partnership Program (CAPP) initiated a statewide, fifteen-month project entitled "Partnerships for Staff Development in Science and Mathematics." The project was funded under the federal Dwight D. Eisenhower Mathematics and Science Education Act (Public Law 100–297), which is administered in California by the California Postsecondary Education Commission and the California Department of Education. The statewide project had three purposes:

- to advance the professional development of secondary science and mathematics teachers of underrepresented students;
- to disseminate the experience gained to CAPP and to other intersegmental programs supporting improvements in mathematics and science and in professional development;
- to enhance and encourage the development of future academic partnerships.

This section presents two major excerpts from Dr. Cates' final report of this project, which has the same title.

These three purposes reflect the intents of the three supporting agencies as highlighted by their mission statements (CAPP Request for Proposals, 1990):

> **California Academic Partnership Program:** The mission of the California Academic Partnership Program is to foster and enable partnerships between California school districts and postsecondary institutions to create improved learning, academic preparation, and access opportunities for students in middle schools and high schools, so that more students, especially those underrepresented on postsecondary education campuses, can successfully complete baccalaureate degree programs.
>
> **Dwight D. Eisenhower Mathematics and Science Education Act:** The state grants appropriated under the Dwight D. Eisenhower Mathematics and Science Education Act (PL 100–297) are to strengthen the teaching skills of teachers and improve the quality of instruction in elementary and secondary education in mathematics and science. This act incorporates state grants previously funded under Title II of the federal Education for Economic Security Act (Public Law 98–377).

To accomplish the purposes of the CAPP–Eisenhower Project, CAPP carried out four sets of activities:

- supported five model partnership projects selected through competitive applications from existing CAPP projects that focused on mathematics and science;
- convened a conference in the fall of 1990, during which leaders of professional development programs, intersegmental partnerships and representatives of the five model partnership projects reviewed their experience with collaborative staff development, discussed characteristics of effective partnerships and strategies for building effective collaboration, and contributed to the refinement of questions for the action research study;
- supported an action research study on the characteristics, impacts and outcomes of effective professional development partnerships;

- developed a book, entitled *Beyond the Handshakes*, for national distribution to provide information about the model partnerships and the research results, as well as to provide a set of key articles on the topic of academic partnerships.

The Five Model Partnership Projects

Part II of this paper provides brief descriptions of the key elements in each project and the major outcomes and impacts related to their project goals and the research questions. This summary highlights the basic features across the projects, especially changes from their previous CAPP projects, and the aspects of professional development that were common across the projects, and lists each project and the organizational partners in each. Contact information for the statewide project and the five partnerships is listed at the end of the report.

In each of the five CAPP–Eisenhower model partnership projects, there were two formal organizational partners, one school district and one postsecondary institution. In all five projects, the two organizational partners had worked together in CAPP partnerships for at least three years (1987–1990). One set of partners, UCSC–Pajaro Valley Unified School District, had been a CAPP project for six years (1984–1990). However, except for the UCSC–PVUSD project, the previous partnerships also had included other districts and colleges or universities so that the present projects were the first time that the partners had worked intensively just with each other. In addition, the emphases and activities in the previous partnerships had covered a much broader range of purposes including curriculum development, student services, parental involvement, and teacher in-service. In the CAPP–Eisenhower model projects, professional development was the primary purpose or activity with some aspects of curriculum development or review as one element of the overall professional development. All five projects also continued a central CAPP concern with improving teaching and learning for students previously underrepresented in postsecondary schools.

In the CAPP–Eisenhower model projects, professional development was the primary purpose or activity with some aspects of curriculum development or review as one element of the overall professional development.

While there were variations across the projects in the means of delivering staff development and the specific content, all five projects shared several features in their approach to or model of staff development that reflected recommendations from Sparks (1983) and others about principles of effective staff development. They established collegial peer relationships between the secondary and postsecondary faculty that began with project planning and continued through full implementation and planning for continuation. Project goals and activities focused on a combination of increasing research-based content knowledge, improving instructional strategies, and providing concrete tools, skills and materials that secondary faculty could use immediately in their classes. They provided regularly scheduled intensive sessions with opportunities between sessions for faculty to try out new strategies and skills in their classes. Along with presentations, regular training sessions also included ample time for discussions about the participants' applications of new practices and for sharing their own ideas about effective instruction. The projects encouraged the participants to collectively create and develop much of their own materials and applications using their new content and skills.

The projects encouraged the participants to collectively create and develop much of their own materials and applications using their new content and skills.

In all five projects, the district was the formal secondary partner. The postsecondary partners included one University of California campus, two California State University campuses, one community college, and one private college. In two projects, participating teachers were from several schools within the same district. However, in three projects, teachers in one department or other sub-unit within a single school were the primary participants. For the department-based projects in the following list, the name of the school is used as the secondary partner with the name of the district in parentheses. The acronyms used as project identifiers in the remainder of the report also are given in the list. The project number is the CAPP identification number.

Middle School Mathematics Project (#8)
University of California Santa Cruz—Pajaro Valley Unified School District
UCSC–PVUSD

Math/Science in Pasadena (#22)
California State University, Los Angeles—Pasadena Unified School District
CSULA–PUSD

Partnership to Improve Teacher Competencies in Mathematics (#23)
California State University Bakersfield—Delano High School (Delano Joint Union High School District)
CSUB–DHS

Bridges to the Future: A Professional Development Partnership to Improve Teaching and Learning in Science (#26)
Oakland Health Academy and Oakland Technical High School (Oakland Unified School District)—
Samuel Merritt College
OHA–SMC

Science Teachers Improvement Program (#27)
Las Plumas High School (Oroville Union High School District)—Butte College
LPHS–BC

Purpose of the Action Research

The purpose of the research was to examine the processes, impacts and outcomes within and across the model partnerships for their effectiveness in carrying out professional development as the primary or exclusive emphasis. The major interest was in identifying the characteristics and dynamics of effectiveness both in the partnerships and in the professional development they delivered. There also was special interest in identifying the impacts and changes within the partner organizations that could be attributed to the model partnerships. With these interests and purposes, there were three priorities for using the results of the research:

- to provide the two supporting agencies (CAPP and the California Postsecondary Education Commission) with information for long-term decision making about when and how academic partnerships can be most useful specifically for delivering professional development;
- to provide existing partnerships with information about strategies and methods for enhancing partnership impacts and outcomes;

- to provide illustrations of effective partnership strategies and methods for use in *Beyond the Handshakes.*

Research Design and Questions

The principal interests and priorities for research of the CAPP–Eisenhower Project suggested organizing the research design around a conception of three levels of partnership effects: the model partnership level; the organizational level (i.e., the organizations and sub-units within the partnership); and the individual level. The central question is associated with the model partnership level with a set of additional research questions organized within each of the three levels to examine the impact of the model partnerships on the capacity at each level to provide, support or benefit from the partnerships and the professional development they provided. Figure 1 outlines the three levels of effects and lists the subsets of interest in two of the levels. Table 1 lists the research questions organized by the levels of effect.

The process of the research was itself collaborative from the planning and design through the final report.

Methodology

The process of the research was itself collaborative from the planning and design through the final report. The statewide project director and at least one co-director from each of the five model partnerships worked closely with a researcher to refine the questions, identify appropriate data sources, review findings in progress, and review several stages of the final report. In turn, the researcher provided ongoing feedback about implications of the findings for each project's work and for supporting partnership efforts from the state level.

The research was conducted using a case study approach with modifications in the level of detail collected for descriptions of the model partnerships and in the data collection methods. The data collection methods and sources included: review of materials related to CAPP–Eisenhower Project and individual model partnerships (e.g., the RFP, proposals and quarterly reports from each partnership, schedules and agendas for partnership activities, evaluation reports from previous CAPP projects); on-site observation of partnership activities; on-site interviews with project co-directors and group interviews with participants; regular meetings and conference calls with partnership co-directors and the statewide director; and frequent telephone discussions with individual project leaders.

Figure 1. Conception of Partnership Effects

Model Partnership Level
Capacity to provide effective professional development and to collaborate effectively

Organizational Level
Commitment and capacity to support professional development and implementation of new skills and methods

District	**College/University**
School	**Teacher Education Program**
Department	**Department**

Individual Level
Capacity to use or benefit from new teaching and learning methods

Secondary Faculty	**Postsecondary Faculty**
Secondary Students	**Postsecondary Students**

Table 1. Research Questions

Model Partnership Level

Central Question: *What are the characteristics of effective academic partnerships for delivering professional development to secondary science and mathematics teachers of underrepresented students?*

How do effective partnerships change or adjust their process and operations to provide professional development?

What changes occur in relationships between organizational partners as a result this partnership?

To what extent are effective partnerships for professional development institutionalized beyond the ending of external or special project funding?

Why do effective partnerships operate as they do?

Organizational Level

What do partners see as advantages and disadvantages of collaborative professional development in contrast to their previous approaches to professional development?

What do organizational partners learn about effective professional development as a result of the partnership providing professional development?

What do organizational partners do differently in their own organizations as a result of the partnership providing professional development?

To what extent will the professional development work supported by the partnership be institutionalized within the partner organizations?

Individual Level

What impact does the professional development partnership have on faculty and students within the organizational partners?

Cross Project Findings Related to Research Questions

Model Partnership Level

Central Question: *What are the characteristics of effective academic partnerships for delivering professional development to secondary science and mathematics teachers of underrepresented students?*

Underlying this question was a curiosity about whether or not changing the focus of the partnerships also would require or result in fundamental changes in partnership structures or operations. Although some operational changes did occur (and are summarized in the response to the first question, below), none of the CAPP–Eisenhower projects made dramatic changes in their basic approach to implementing the partnerships that were attributable to focusing on professional development in contrast to their previous CAPP activities, which included curriculum development, student services, and parental involvement in addition to inservice. Instead, the five projects typically reflected characteristics and principles that are commonly accepted as contributing to effective collaboration. Galligani (1990) has described characteristics of effectiveness as they apply to previous CAPP projects; others (e.g., Cates, 1983) have identified similar characteristics as they apply more generally to collaboration for school improvement.

In addition, these partnerships had clear models of professional development around which they organized their joint work. Although projects varied in how the models were carried out, the principles underlying the models were similar across projects and some of the principles of effective professional development (Sparks, 1983) also were similar to principles or characteristics of effective collaboration.

The following list highlights five characteristics that seemed most important to the success of the CAPP–Eisenhower projects. Those that apply both to partnerships and to professional development are noted with an asterisk.

- setting clear and common goals *
- establishing genuine peer relationships among participants *

- establishing mutual trust *
- providing sufficient time *
- maintaining flexibility and adaptability

How do effective partnerships change or adjust their process and operations to provide professional development?

All five partnerships made several clear changes from their previous CAPP projects. In general, the changes concentrated the project focus more narrowly in terms of the number of participants and more sharply in terms of the approach or model for carrying out project work. Although the changes were not caused by the shift to professional development, they supported the professional development efforts and appear to have contributed in part to the projects' successes.

In general, the changes concentrated the project focus more narrowly in terms of the number of participants and more sharply in terms of the approach or model for carrying out project work.

In three projects, the number of formal partners went from four to two. Following on this change, the projects also worked primarily in a single district, school or department within the school. The number of school faculty and postsecondary faculty was also reduced in all five partnerships. In addition, although secondary students continued to be the beneficiaries and reflectors of successful faculty development, they were not typically included as direct participants in professional development activities.

Although changes in size and numbers may appear to be structural rather than operational, such changes directly affect operation and process in providing more appropriate or manageable scale for the intensive, ongoing personal and professional interaction among project participants. Similarly, the focus on a single unit (district, school or department) provides greater opportunities for participants to share information and expertise on a daily or weekly basis, thus providing greater continuity and cohesion among participants.

What changes occur in relationships between organizational partners as a result of this partnership?

In the original research question, we distinguished between (a) changes that might result from changes in partnership processes and operations, and (b) changes that might result from providing professional development in contrast to the previous partnership emphases (e.g., curriculum development). Although several changes in relationships have occurred, the changes are not attributable clearly or primarily to one or the other of the two specific subsets of changes. Rather, they generally appear to be the normal growth of a positive relationship due to the continuity of collaboration and change over the longer history of their work together in CAPP projects. There are three main areas of change across the projects. First, the working relationship between the partners has become closer and stronger. The project directors are working closely in planning for continuation of the project work. Secondary and postsecondary faculty participants are initiating and maintaining contact with one another outside the formal project activities.

Second, partners are generally sharing resources more than in the past. This includes materials and equipment as well as information and ideas. It also includes making available more opportunities for joint secondary–postsecondary professional development.

Third, in the UCSC–PVUSD and OHA–SMC projects, the partners have begun more actively coordinating their broader event schedules to decrease the conflicts with project activities and increase the rate of participation. The UCSC–PVUSD project is expanding the coordination to cover other joint activities and also are beginning to work with the County Office of Education to coordinate other opportunities for professional development.

To what extent are effective partnerships for professional development institutionalized beyond the end of CAPP–Eisenhower external funding?

In emphasizing institutionalization, the California Academic Partnership Program uses the following definition and explanation:

> Institutionalization is the act of putting something in the care of an institution.
>
> Institutionalization assures the continuation and use of project practices and products. It is sometimes described as "what's left

> after the CAPP funding goes away." (Clark and Hancock, 1990: II)

At least some aspects of the professional development work will continue in all five projects during the 1991-1992 school year. All five either already have plans and funds designated for continuation or are looking for other funds to support continuing professional development collaboration. However, formal partnerships specifically to continue the CAPP–Eisenhower project work are clearly continuing in three of the projects: UCSC–PVUSD, OHA–SMC, CSUB–DHS. In these three, the partnerships themselves seem likely to grow and continue indefinitely. In all three, there is a strong commitment both to the principle and practice of collaboration by key organizational leaders as well as by project co-directors and participants. In addition, they have a strong history of success in their joint work as well as in leveraging other resources to complement their CAPP or CAPP–Eisenhower Project work.

Why do effective partnerships operate as they do?

Partners in all five of the CAPP–Eisenhower projects have learned well the lessons of creating and sustaining effective partnerships. Most of the co-directors had substantial prior experience either in previous CAPP projects or other collaborative efforts with which to begin these partnerships. They also had unusually strong commitment to active, genuine collaboration which they maintained in consistent practice as well as principle. In addition, the partnerships implemented sound models of professional development, the characteristics of which complemented and supported the operation of the partnership itself.

Organizational Level

What do partners and participants see as advantages or disadvantages of collaborative professional development in contrast to previous approaches to professional development?

In discussions specifically about this question, project directors identified only advantages to providing professional development through the partnership arrangement. They specified two key underlying advantages.

First, working collaboratively has provided a broader base and a larger pool of resources for the professional development activities than either partner could have provided separately. Increasing the available resources by contributions from both partners was one advantage or outcome expected from the partnership. This can be considered a direct advantage and has occurred for all the projects. There also has been an indirect and unexpected advantage of increased access to additional resources from nonpartner organizations that has been made possible by the connections of one of the partners. These resources have been primarily information and expertise, but also have included new and/or expanded relationships with other organizations outside the partnership and the project activities. This indirect advantage has been most apparent for the OHA–SMC and the UCSC–PVUSD partnerships.

. . . working collaboratively has provided a broader base and a larger pool of resources for the professional development activities than either partner could have provided separately.

Second, the partnership has provided consistency and continuity in working relationships between partners, which in turn laid a foundation for four other advantages and associated outcomes:

> The opportunity for secondary and postsecondary faculty to expand their common language about their subject areas and expand their shared understanding about effective instruction and about what works in providing effective professional development.
>
> The desired peer relationships between secondary and postsecondary faculty could be cultivated and strengthened through sustained contacts both within and outside the formal project activities. This allowed postsecondary faculty to recognize the variety of talents and skills that secondary colleagues could bring to other university-based work and to begin including them in additional university activities and projects outside the professional development partnership.
>
> Once participants (especially secondary faculty) recognized and accepted the peer relationships as genuine, the level and pace of learning and progress toward desired improvements moved

more rapidly than project leaders had experienced in other professional development efforts.

The mutual investment in the partnership itself and in providing successful professional development provided stronger incentives for both partners to extend themselves in finding creative solutions to delays, disruptions, and difficulties in carrying out project plans.

What do organizational partners learn about effective professional development as a result of the partnership providing professional development activities?

For the most part both secondary and postsecondary partners have learned or reinforced in fact and direct experience what is laid out as assumptions and principles in the professional development model they used. These learnings can be summarized in the following statements:

Teachers are eager for good, sound professional development that equally emphasizes increasing content knowledge and providing practical resources, materials, and instructional strategies and applications that can be used directly and immediately with students.

Teachers are very effective in working with one another and already have a wealth of knowledge and expertise to share with their colleagues. Professional development will be most effective when the program or project actively solicits and taps into the resources that teachers themselves bring to their own professional development.

Postsecondary faculty especially have learned that secondary faculty have as much to contribute to professional development efforts as they have to receive from the project activities provided for them.

Secondary faculty respond and learn best when they are included as genuine peers in the full range of professional development activities, from planning through implementation and continuation or adaptation.

Districts have learned that teachers are a source of sound, creative leadership for districtwide professional development when given genuine responsibility and support for leadership.

What do organizational partners do differently in their own organizations as a result of the partnership providing professional development?

Secondary Partners—District Level

In four projects, secondary faculty are being included more in the planning and implementation of districtwide mathematics and science improvements in professional development and in curriculum development, alignment and articulation. In addition, where the project involves teachers from multiple schools, communications have increased and improved across the schools. The increased school–school communication has supported and enhanced the increased teacher participation in districtwide efforts.

...more impacts are apparent at the department level than at the school level.

Secondary Partners—Department Level

Not surprisingly, given the level of focus on subject areas and departments, more impacts are apparent at the department level than at the school level. And in three projects, participants report significant changes within the department.

Both Las Plumas and Delano High Schools report dramatic moves from disjointed, individually oriented departments to genuinely cohesive, collegial, and coordinated units both in planning, decision making and day-to-day work. For the Las Plumas science department, the change is especially apparent in the way faculty have approached budget decisions for 1991-1992. In the past, faculty more often than not have competed for resources for their own courses or area of concentration (physical science versus biological science). In planning for 1991-1992, they have worked cooperatively to assess needs across the entire department and allocate resources for agreed-upon departmental priorities.

Las Plumas, Delano, and Oakland Tech all report much better consistency, coordination and alignment both within and across courses and instructors due to shared understandings and approaches among faculty. Consequently, students get more coherent and consistent instruction.

The departments as units have more and better resources due to increased faculty sharing and to the project's emphasis on developing and acquiring new materials and equipment. All report greater use of computers and other appropriate technology across classes and courses. All three report more consistency and continuity in general working relationships as well as in project-specific work and greater self-direction for identifying and meeting their own professional development needs. Project leaders and faculty also report that the increased collaboration and collegiality have improved the way the departments induct or orient new teachers, welcoming them to the team and actively helping them get started rather than leaving them to fend for themselves.

Finally, the Las Plumas science department reports that they are looking at job applicants differently. In particular, they are more interested in how open the applicant is to learning and what attitudes and experiences the applicant holds toward collaboration within the department and with other organizations.

Postsecondary Partners—Administrative Level

Except for faculty and administrators directly involved in the projects, there is little evidence of change in attitudes or activities within the postsecondary partners. One exception is that UC, Santa Cruz has established a formal school college liaison position to maintain ongoing relationships not only with PVUSD but also with other districts in the university's service area.

Postsecondary Partners—Teacher Education Program Level

There were no explicit requirements for projects to directly link or incorporate project learnings directly into the teacher education program or to identify any goals or outcomes bearing on preservice education. Consequently there was little planned change at this level and no pattern of change across all or most of the postsecondary partners. However, there were two sets of changes in individual projects.

At CSULA, two secondary project faculty have been engaged to teach preservice methods courses, one in science and one in mathematics. Both have used project information, resources and materials for their courses. By the end of spring 1992, the two faculty will have taught three courses each. In addition, the CSULA project co-director has incorporated materials and strategies from the project into his own methods courses, a total of nine courses over three terms. Altogether in 15 courses during 1991-1992, the materials, resources, and instructional strategies developed in the project have been extended to a total of approximately 210 preservice students and 40 emergency credential teachers working toward certification.

At CSU Bakersfield, the project co-director will continue to involve mathematics undergraduates directly in project activities as one way of strengthening their mathematics skills and as a way of interesting them in teaching secondary mathematics as a career. He also has incorporated project resources and information into his own courses.

To what extent will professional development work supported by the partnership be institutionalized within the partner organizations?

Across all five projects, significant aspects of project work will continue and grow whether or not the formal partnership itself survives or continues to emphasize professional development *per se.* In two projects, Delano High School and Las Plumas High School, fundamental changes have occurred in approaches to both professional development and ongoing working relationships and operations with the respective departments. These involve new departmental cohesion and collegiality, active participation by all members in departmentwide improvements as well as improvements in individual teacher skills and knowledge. In essence, professional development has become a part of regular department work not only on designated days or events but as a part of "ordinary" activities such as department meetings and review of individual courses and units or work. While project leaders in both schools will continue looking for additional external support for future staff development activities, the day-to-day work and relationships are supported by regular department resources. Due primarily to the commitment of the project co-directors (the district superintendent and the university faculty member), CSU Bakersfield and Delano High School are most likely to continue the work together.

In the Pasadena and Pajaro Valley Districts, the collegial, collaborative approach to professional development and strategic planning is being incorporated into districtwide professional development and planning, with key project participants becoming leaders in district efforts. Project participants have sought, found and cultivated opportunities to promote these approaches and, based on reports of project success, district leaders have encouraged these expansions and especially the districtwide involvement of project teachers. The UCSC–PVUSD partnership will continue in some form, most likely associated with one or more of several other existing or planned district or university projects. In the Oakland Health Academy, both the departmental activities and involvement in expanded district efforts seem sure to continue. They are firmly imbedded both with individuals and within the school. Project leaders and faculty are commited to and assertive in finding opportunities to participate in district and regional professional development improvement efforts.

Individual Level

What impact does the professional development partnership have on faculty and students within the organizational partners?

Secondary Faculty and Students

Virtually all teachers across the five projects report numerous similar positive outcomes for their own attitudes and work. Their attitudes in terms of self-confidence and enthusiasm for their work have increased markedly due to the combination of being treated as equals with postsecondary faculty, having their own experience and expertise accepted positively by other project members and gaining new learnings and instructional strategies that work well with their students. In addition, teachers and project co-directors consistently report these types of concrete outcomes:

> New teachers in three projects have received active, concrete support in their first year of teaching that has increased their self confidence and made their induction into full-time teaching a positive experience. Other individuals in the project have served as mentors who have been available both in and out of project meetings to assist them with making a smooth start and in applying the new techniques in their classes. In addition, they have found the experienced teachers open to their ideas and suggestions as coming from a peer professional rather than as from a "newcomer."
>
> Most of the teachers have become active participants and initiators of ideas, information and resources both within the project and in the district. Many are now actively engaged in developing plans and proposals to continue project-specific work and in working on districtwide staff development plans that have evolved directly from the CAPP–Eisenhower Project approaches.
>
> Virtually all the teachers say they have tried out the new strategies and methods and are actively using most of them on a regular basis. In essence they have gained a new and enlarged repertoire of teaching skills.

For secondary students, teachers report generally increased student interest and enthusiasm as teachers use new methods.

For secondary students, teachers report generally increased student interest and enthusiasm as teachers use new methods. One particu-

larly visible example is at Delano High School where students fill the computer lab during their free periods to practice various mathematics lessons and work ahead on their own as they now are encouraged to do. Another is at Las Plumas High School, where faculty also report that science students now regularly arrange to come in after school to use the hands-on lab setups and practice using various new equipment.

Postsecondary Faculty and Students

Generally, postsecondary faculty report fewer impacts for themselves. The consistent impact is recognition of the importance and value of establishing genuine peer relationships with secondary faculty. While they have previously accepted it as important for involving secondary faculty in project work, they increasingly have recognized the secondary faculty as genuine peers in knowledge and teaching expertise and have learned much from their project participation.

The involvement and impact for postsecondary students have been broader than originally expecte. The CSUB–DHS project included only nine postsecondary students in partnership activities. However, in three methods courses now taught by secondary faculty from the project, the CSULA–PUSD partnership has reached some 210 CSULA preservice students and 40 emergency credential teachers working toward certification. These partnership teachers have used the project materials and their own project learnings as the basis for their courses, emphasizing the new instructional strategies and skills they gained from the project. Two student teachers at Las Plumas High School also were included in many of the project activities. Consequently, the partnership work reached a total of 261 postsecondary students.

Issues and Recommendations Emerging from Project Work

Three major sets of issues and recommendations have arisen from the combination of project processes and outcomes and the ongoing discussions with project directors and the statewide project director. For the most part, these issues have been topics of interest, discussion and sometimes frustration from the outset of the projects. Neither the issues nor the recommendations are new to discussions of collaboration. Instead they are among the stream of issues and recommendations that emerge in virtually every examination of collaboration and partnerships. In this regard they may best serve as reminders that partnership issues are not problems to be solved and then forgotten or ignored, but are circumstances that require constant management in order to keep partnerships operating effectively. Consequently, although the recommendations are directed particularly to the statewide California Academic Partnership Program (CAPP) and the California Postsecondary Education Commission (CPEC), which administers the Eisenhower State Grants Program, they also are applicable to agencies and organizations that fund or administer school–university partnerships and other collaborations for school improvement.

Real Costs of Collaboration and Partnerships

A continuing theme in discussions of these projects has been: "It's costing more than we expected." This reflects a widespread issue that the real costs of implementing or continuing a partnership and its improvement activities are rarely reflected accurately by the formal budget. Moreover, the real costs cannot be measured or compensated in dollars alone; they come in "overruns" of time, energy and attention required to administer and participate in both the partnership itself and the programs and activities provided by the partnership. Project leaders and sponsors often seem surprised by this. Yet, if we consider how partnerships and most other improvement projects are funded this should be no surprise. Support for partnerships is determined by the amount of funding that is available, not on any real data about what partnerships may actually cost. And cost data for applications or proposals are tailored to fit within the funding available. Although many studies of partnerships may consider some aspect of cost benefit, the analysis is usually based on the observations and perceptions of the participants, not on any hard data about actual costs such as the real time required to prepare for, carry out, and follow up on substantive or administrative activities. Neither the funding agencies nor researchers and evaluators require or encourage partnership projects to document costs beyond those covered by the approved budget. But those extra costs don't go away; they must always somehow be covered either with slack resources from partner agencies or "out of hide" of participants and project leaders. Consequently, extra costs are not documented and there is rarely any realistic assessment of costs.

The most serious problems result from attempts to institutionalize or replicate the projects. New or extended efforts are likely to be based on budgets similar to the formal, visible costs reflected in previous budgets, not on the real costs, with the result that project efforts fade or founder in unrealistic expectations and inadequate resources.

Recommendation: CAPP can help present and future partnerships better manage this issue by addressing it explicitly with a short-term, small-scale research effort across a sample of existing CAPP partnerships. The focus should be to document as much of the extra time and costs for a variety of types of partnerships and approaches or models of improvement efforts. Data can be collected regularly in reports already required. The main types of data to be collected would include: the number of hours required by project administrators and participants to carry out project work that exceed those estimated or covered by the budget; the additional costs for other project resources (e.g., materials, equipment, consultants); how the additional costs were covered (e.g., by in-kind contributions from partners, by other external funds). An ongoing collection and analysis of data can provide both an overall picture of costs, information about patterns of extra costs such as variations in the types (e.g., time, materials) and phasing of extra costs (e.g., during planning, start up, full implementation). It also may be possible to get reasonable estimates for these items from recently completed projects such as the five CAPP–Eisenhower partnerships

Influencing Postsecondary Partners

In the five CAPP–Eisenhower partnerships, the main outcomes in the postsecondary partners were for the college or university faculty who participated. Very few outcomes or changes were reported for the organization or the teacher education program. Yet those that did occur suggest important potential improvements for the college or university itself and for future partnership efforts (Hancock, 1991). Thus, two questions arise about influencing postsecondary partners:

> *Why are there so few clear, or clearly reported, outcomes for postsecondary partners?*
>
> *How can positive outcomes be encouraged and supported?*

The answer to the first question is quite direct: Although there may be a hope or desire or implicit expectation for positive organizational changes within the colleges and universities, there is no explicit expectation, goal or requirement that these or other CAPP projects include attempts to change anything about the postsecondary partners except their participation in the partnership. The explicit focus of CAPP and the CAPP–Eisenhower projects is to improve teaching and learning in secondary schools. College and university participation is for the purpose of assisting the improvements in secondary schools. This isn't necessarily a critical fault or problem, either for the CAPP program, the individual projects, or the college and universities. However, if there is, or has been, or is now emerging, an underlying expectation of some substantial changes within this segment as a result of the partnerships, then there is or will be a problem of failed expectations. It should be noted that any lack of clarity about expectations for postsecondary partners would not be unique to CAPP but, instead, fairly typical of previous programs sponsored at both the federal and state levels (Cates, 1983).

In addition, highlighting postsecondary changes has not been a priority for previous research and evaluation on CAPP projects. While changes may have been identified, they are described as benefits to a project partner, not emphasized as benefits of particular importance to colleges and universities as a category of educational institutions.

Recommendations: CAPP can conduct a review of previous studies and evaluations to identify and report on changes and improvements particular to college and university partners. In the future, CAPP also can request or require more information about such changes in the regular progress reports from projects and can highlight them for discussion in regular CAPP meetings.

Any serious desires or expectations for the partnerships to influence positive postsecondary changes should be clearly formulated and stated.

This recommendation addresses the question of encouraging more visible positive outcomes for postsecondary faculty. Any serious desires or expectations for the partnerships to influence positive postsecondary changes should be clearly formulated and stated. In addition, CAPP—or any other sponsor of partnership efforts—can require applicants to include goals, mechanisms, and measurements that specifically support and reflect the desired changes.

Cultivating New Leadership

Effective leadership is well recognized as a critical element of success in any endeavor, whether or not the endeavor is collaborative. Cultivating new leadership is equally essential both for sustaining or continuing a special project beyond external funding and for establishing and maintaining momentum within the confines of the special project itself. But the importance of cultivating new leadership is rarely as well recognized or attended to. CAPP may be unique in this regard because, from the beginning, it has paid special attention to identifying and cultivating new leaders within and across CAPP projects. The benefits of this attention are especially apparent across these five partnerships.

In four of the partnerships, at least one co-director changed from the previous CAPP project to the CAPP–Eisenhower partnership. In one project, the change was planned because the content focus changed from mathematics to science so that one co-director was from the science department rather than both being from the mathematics department. In the other three, personnel changes or reassignments meant that previous leaders were not able to continue and new leaders had to be identified. In three of these same partnerships, additional unscheduled changes toward the end of the formal project work could have left the partnership without leadership for continuing into fall 1991 and beyond, with external funding. However, the changes have not appeared to create any great serious impediment to the success of the partnerships.

How and why have the four partnerships avoided the difficulties of leadership changes that often inhibit effectiveness and continuation? The how and why are similar for both sets of changes. For the how, in both instances, the co-directors already had identified potential leaders from among participants in the previous CAPP project and had involved them in statewide CAPP activities such as project directors' meeting and conferences. Thus, they had some feel for the larger CAPP program and the issues and project routines that a project director must address. Within the CAPP–Eisenhower partnerships, project co-directors began looking for leadership interest and potential fairly early and discussing the issue in meetings of the CAPP–Eisenhower project directors.

As we noted above, the why is largely attributable to CAPP's emphasis on cultivating new leadership early and continually in each cycle of CAPP projects. This has not been a formal requirement. Instead, CAPP began early to encourage project directors to include one or more participants regularly in statewide meetings and in many instances extended formal invitations to the participants identified by the project directors. In addition, CAPP made clear that such participation could be supported with regular project funds without any special request or separate approval. In short, CAPP set a precedent and established a pattern of thinking and behavior which became institutionalized within and across the five partnerships. The result was that identifying and providing for new leadership was part of the routine for the partnership co-directors rather than being an unanticipated problem that demanded special attention.

For this issue no recommendation is necessary. We've addressed the issue to highlight a very positive aspect that should be acknowledged equally with issues that require further attention.

Part II. Summaries of Individual CAPP–Eisenhower Projects

The following summaries of the five model partnerships cover four areas which highlight both similarities and differences among the projects:

- key elements of the individual project as described in the project proposal;
- changes from the previous CAPP project;
- outcomes related to the project's goals;
- outcomes related to the research questions.

In addition to similarities in outcomes that will be apparent in the summaries, all five projects have two things in common. First, in all five projects, the partner organizations had worked together in a previous CAPP project for at least three years, and the UCSC-PVUSD partners had worked together in a CAPP project for six years. Second, a central concern underlying all five projects is improving teaching and learning for underrepresented students. For schools associated with each project, the student population is substantially language or ethnic minority or the school is in a rural area. So although the professional development emphases are not exclusively focused on working with underrepresented students, all teachers involved in the partnerships work directly with fairly large numbers of underrepresented students so that positive changes from the projects reach these students directly and immediately.

Middle Schools Mathematics Alliance #8

University of California, Santa Cruz
Pajaro Valley Unified School District

Priority Area: mathematics in four middle schools

Target Teachers: 12 most highly qualified mathematics teachers (of 25 total) in 4 schools

Target Students: 2,800+ middle grade students (7 ethnic groups, 25 language groups)

Project Goals

- Increase participants' working knowledge of mathematics framework.
- Increase participants' skills in using selected teaching strategies.
- Knowledge of four or more of the selected strategies.
- Ability to implement two or more of the strategies.
- Prepare and test two or more lesson plans using strategies.
- Teacher-researcher collaboration in designing staff development resources for middle school mathematics teachers.

Need for Change

- lack of student preparation for 9th grade algebra
- teachers' expressed need and desire to:
- update knowledge of subject matter and state framework
  - increase knowledge and skills in effective teaching strategies
  - update knowledge and skills in using teaching resources
  - limited mathematics backgrounds of many mathematics teachers (80%)
- district priorities for 1990-1991 to strengthen mathematics instruction

Staff Development Model: regular, one-day training workshops with interim opportunities for classroom trial; follow-up and feedback in subsequent workshops; teachers develop mathematics curriculum units, two per person.

Change Measurement

- increased knowledge and skills about effective teaching strategies
- participant responses about workshops
- extent of classroom implementation

Changes from Previous CAPP Project:

- fewer UCSC faculty participants, from 5 to 3
- more secondary faculty participants, from 8 to 14
- change in UCSC project co-director
- focus only on middle grades mathematics

Outcomes Related to Project Goals

Increase working knowledge of mathematics framework.
In the project's internal evaluation (Henderson and Isaac, 1991) teachers' self-reports reflect gains in teaching practices that are consistent with the state framework. In group discussions for the external research/evaluation, teachers also reported increasing their understanding of the state framework and how to use the framework in guiding their own approach to teaching mathematics.

Increase skills in using selected teaching strategies.
Teachers increased the use of concrete materials and approaches such as mathematics puzzles and games, logic problems, and hands-on problems. In group discussions, they generally identified learning new concrete strategies and approaches as a major reason for their interest in the project. Teachers also tried the strategies they learned in project workshops and incorporated selected strategies with their own students. All but two participants reported trying out at least one new strategy or practice between each of the Saturday workshops and several tried out three or more (Henderson and Isaac, 1991).

Teacher–university collaboration in designing staff development resources.
The project participants are exploring ways to continue and extend their work individually and as a group, and to continue the organizational collaboration in specific similar activities. Two possibilities would allow the project to leverage other existing resources by connecting with UCSC's National Center for Research on Cultural Diversity and Second Language Learning and/or UCSC's Center for Teaching.

Outcomes Related to Research Questions

Model Partnership Level

The district increased its project matching funds to allow three additional teachers to participate in the project.

The district and university each appointed a formal liaison position/person to maintain and cultivate continued collaboration with one another and with other likely partners in additional areas as well as in staff development. Budget constraints at UCSC eliminated the position over the summer 1991, but by fall 1991 university leadership were reconsidering funding the position and reconstituting the faculty committee that was previously responsible for overseeing this function.

The district and the university have begun better coordinated scheduling of cooperative activities and events to increase the opportunities for better participation rates both by district and university faculty. This applies both to the project and nonproject work. In addition, they have begun to coordinate their joint and separate activities with and through the county office.

Organizational Level

District: As a direct result of one project session, "Developing Instructional Improvement Projects," the project teachers initiated a districtwide effort to develop a model plan for middle school mathematics that focuses on heterogeneous ability groupings. The district began in January 1991 to use the project participants' outlines as the basis for beginning a districtwide articulation between middle school and high school mathematics.

As part of a new strategic planning effort, the district has adopted strategic goals that are very similar to CAPP's state-level goals regarding working with underrepresented students and those of the earlier CAPP Gateway project. The implication here is that CAPP-related work has helped focus the district's attention on needs of underrepresented students and/or anticipated the need for improved responses to the needs of these students.

Department: Teachers report increased departmental focus on staff development days in their own schools. They attribute this to communication and information they have brought to their schools as a result of the project work.

Individual Level

Regular communication and active work among project teachers across schools is a first for these teachers. They have stayed in touch outside the project meetings regarding project work. In addition, much of the planning for their proposal to the district was done well outside the regular project sessions. Teachers reported that regular individual communication across schools is a first for them and one of the most important benefits of the project. The first-year teacher participant was especially appreciative of establishing these contacts and reported that the project and the contacts with the other project teachers provided her with more support and learning than was available in her own school.

Teachers reported that regular individual communication across schools is a first for them and one of the most important benefits of the project.

Institutionalization

The collaborative relationship between UCSC and PVUSD appears to be well-rooted and institutionalized beyond any specific project. After seven years of working together formally on CAPP activities, strong personal and institutional relationships have been established. These relationships and collaborative work growing out of the relationships are likely to continue indefinitely. They already have weathered a series of setbacks over the past three years that include:

- departure of UCSC personnel who have been key participants or supporters of the university's CAPP work, including the co-director of the original CAPP project and the chancellor who encouraged and strongly supported the collaborative work;
- departure of key PVUSD personnel involved in CAPP projects, including original co-director of the CAPP project, the director of program evaluation, and the district superintendent;
- budget reductions in both organizations that have limited or reduced staff time for collaborative activities (e.g., UCSC cut funding for the position of coordinator for university–school programs for 1991-1992);
- key UCSC faculty have taken on increased university responsibilities that reduce or eliminate their availability for CAPP activities;
- the 1989 Loma Prieta earthquake provided significant distractions from collaborative efforts as each organization struggled to regain its own equilibrium and stability after major disruptions, such as the destruction of Watsonville High School where much of the earlier CAPP work had occurred.

Math/Science in Pasadena #22

California State University, Los Angeles
Pasadena Unified School District

Other Participants: Networking participants included Los Angeles Unified School District (two schools), Garvey Intermediate School District (eight schools), and Alhambra Unified School District (one school)

Priority Areas: connecting pre-algebra with college preparatory mathematics courses; hands-on science programs in 8th–9th grades; strengthening links between mathematics and science and other areas such as computer literacy, health, career and educational planning

Target Teachers: 40-50 total teachers in 10 secondary schools:

- core group: 18 teachers/counselors in four schools (two junior high schools, two high schools)
- networking participants: 10 at each of the seminars, primarily 8th-9th grades
- CSULA credential candidates: 70 LAUSD teachers; 30 preservice

Target Students: 1,000+ in classes of target teachers, mostly 9th graders

Project Goals

- Extend partnership by showcasing curriculum developed in previous CAPP project and by encouraging linkages with teachers in other subjects.
- Conduct workshops/conferences to encourage PUSD, LAUSD and other regional teachers to incorporate instructional strategies developed and tested by CAPP project.
- Each of 40-50 PUSD teachers will incorporate at least three instructional strategies.
- CSULA–LAUSD participants will try at least one strategy.
- Each of 15 instructional strategies will be field-tested in at least 10 classrooms.
- Create mathematics/science curriculum manual of the instructional strategies.

- Disseminate curriculum innovations through CAPP publications and faculty presentations.

Need for Change

- low enrollment in advanced mathematics and science courses
- low student scores on California Assessment Project (CAP) mathematics tests
- little interaction about curriculum among faculty across the four high schools

Staff Development Model: summer institute for intensive work; sustained collaborative work to develop materials and strategies during academic year; hands-on workshops; and follow up.

Change Measurement

- completion of the scheduled events with positive participant evaluations
- incorporation of least three new instructional strategies
- modification of strategies based on field-testing
- development of mathematics/science curriculum manual

Changes from Previous CAPP Project

- fewer "core" partners, from 4 to 2
- fewer secondary faculty teachers, from 76 to 18
- fewer college faculty, from 22 to 1
- change in CSULA co-director

Outcomes Related to Project Goals

Extend partnership by showcasing curriculum developed in previous CAPP project and by encouraging linkages with teachers in other districts.

Curriculum developed for K–12 geology and integrated biology and mathematics work were included in the materials for the CSULA methods courses taught by the project co-director and those taught by three secondary faculty from the project. Linkages with teachers from other districts came primarily through contacts with teachers from the networking districts in the project seminars.

Conduct workshops/conferences to encourage project teachers and other regional teachers to incorporate instructional strategies developed and tested by CAPP project.

Project activities included nine successful workshops on mathematics and science instructional strategies and study and implementation of three national and state mathematics and science standards and frameworks selected by the teachers:

> *Curriculum and Evaluation Standards for School Mathematics.* National Council of Teachers of Mathematics, 1989.
>
> *Professional Standards for Teaching Mathematics.* National Council of Teachers of Mathematics, 1991.
>
> *Science Framework for California Public Schools Kindergarten Through Grade Twelve.* California State Board of Education, 1990.

In addition, the teachers formed four working groups or teams to continue studying the standards and frameworks as well as to develop curriculum materials and instructional strategies consistent with the standards and frameworks. There were two teams of science teachers (one junior high and one high school) and two teams of mathematics teachers (one junior high and one high school).

Each target teacher will incorporate at least three instructional strategies.

All the teachers tried out at least three strategies and most reported incorporating four-to-five strategies in their classes.

Each of 15 instructional strategies will be field-tested in at least 10 classrooms.

This goal was not addressed in a formal manner for field-testing. However, teachers regularly tried out new strategies in their classes and reported the results in the workshops.

Create mathematics and science curriculum manual of the instructional strategies.

Partnership participants did not develop a separate, single curriculum manual for mathematics and science. Instead, each of the four teams organized and duplicated the materials and curriculum the team created and collected so that all teams and team members can have access to each set of curriculum materials, instructional strategies, and aides.

Disseminate curriculum innovations through CAPP publications and faculty presentations.

Project teachers presented their experiences and curriculum materials at the National Science Teachers Association conference in Long Beach in fall 1991 and through the Southern California Science and Mathematics Association. In addition, project teachers served as lecturers for methods courses at CSULA in three terms: spring 1991, fall 1991, and winter 1992. CAPP–Eisenhower project materials were the mainstay of course materials and examples of instructional methods for the preservice teachers. The project director also used project materials and strategies as the principal resources for three methods courses in each of three terms. In the total of 13 methods classes, CAPP materials and strategies reached 210 preservice teachers and 40 emergency credential teachers who were working toward certification.

Outcomes Related to Research Questions

Model Partnership Level

The number of networking partner districts increased from one to five, increasing the total number of participating teachers from 25 to 50.

The CAPP–Eisenhower project also worked with similar projects at CSULA, sharing project ideas and networking among project participants with the Bell High School Golden Eagle Project and the California Science Project.

Organizational Level

District: Project faculty have been major writers for several key proposals for the district and are leaders in other externally funded projects and in special district projects such as:

- Life Science Curriculum for Pasadena Unified School District
- Physical Science Curriculum for Pasadena Unified School District

Teams of CAPP–Eisenhower teachers are working in a district project to evaluate and suggest reforms in science and mathematics curriculum and instruction.

School: CAPP–Eisenhower teachers also are participating and/or leading special projects within their own schools:

- Space and Finance Academies at Muir High School
- 100 Schools Project at Muir and Pasadena High Schools
- Pasadena Mathematics–Science Integrated Curriculum Development Project
- School-based Management Projects at Pasadena and Blair High Schools

Individual Level

For most teachers, this project provided the first opportunity to work directly with teachers from other schools in the same district for ongoing work. This also was the first time they had met colleagues from other schools in the same district. Among the learning teachers reported finding most helpful were: improved ways to sequence course information both within their own classes and from one grade level to the next, new approaches to working with students (e.g., cooperative group activities), and different ways to assess student work (e.g., portfolios). Having opportunities for repeated trials and feedback from their project colleagues was especially helpful. One group of teachers particularly stressed that, for the first time in professional development activities, they were having fun as well as learning new information and improving their teaching skills.

Institutionalization

Some activities similar to those in the CAPP–Eisenhower project seem likely to continue given the continuing interest of the teachers. In addition, leadership for continuing project-related work has been transferred to a teacher steering committee. It is not possible to predict which aspects will continue or for how long. Given the increasing involvement of project teachers in school and districtwide activities, it may be that more active teacher participation and leadership is what achieves most long-term impact.

Partnership to Improve Teacher Competencies in Mathematics #23

California State University, Bakersfield
Delano Joint Union High School District

Priority Area: mathematics in grades 9

Target Teachers: 13 teachers in Delano High School mathematics department

Target Students: all 1,500+ Delano High School students in mathematics courses (78% of DHS total)

Project Goals

- Increase teachers' content knowledge in mathematics.
- Improve teachers' instructional techniques in mathematics.
- Provide mathematics teachers with instructional designs incorporating technology.
- Provide undergraduate mathematics majors at CSUB with opportunities for early field experience.

Need for Change

- DHS mathematics teachers not well prepared for using mathematics framework
- decline in DHS mathematics enrollments overall from 9th through 12th grades
- inadequate number of students prepared for college level mathematics
- teachers' need to learn computer use in mathematics

Staff Development Model: supportive, in-depth training from awareness to implementation level, including peer observation, coaching, and role playing; teachers involved in planning; workshops, training and follow up; CSUB faculty as trainers with teachers from previous CAPP project as consultants

Change Measurement

- pre- and post-tests on content knowledge
- pre- and post-tests on knowledge about instructional strategies
- documentation of changes in use of technology and new strategies
- CSUB undergraduates keep journal of early experiences

Changes from Previous CAPP Project

- fewer partners, from 5 (3 high school districts and 2 postsecondary schools) to 2 (CSUB and DJUHSD)
- fewer secondary teachers, from 32 to 14
- fewer postsecondary faculty, from 6 to 2
- change in co-directors in CSUB and in DJUHSD
- CSUB undergraduate mathematics majors added as participants in partnership work

Outcomes Related to Project Goals

Increase teachers' content knowledge in mathematics.
In addition to the monthly workshops and training sessions presented by CSUB faculty, the project sponsored DHS faculty participation in other workshops and meetings such as the Mathematics, Science and Technology Conference at CSUB. Five DHS faculty also participated in a CSUB course entitled "Effective Strategies for Teaching Math A," offered at CSUB during the winter quarter 1991. The course included review of the mathematics framework, review of college preparatory mathematics such as trigonometry and logarithms, as well as specific strategies for teaching the Math A in high school classes. More detailed data from pre- and post-tests on changes in faculty content knowledge will be included in the model project's final report.

Improve teachers' instructional techniques in mathematics.
Teachers are using more concrete materials in teaching (e.g, manipulatives, cuisenaire rods, geoboards, cooperative learning). Mathematics faculty received training in use of computers in mathematics instruction and have had access to mathematics software for various courses and levels. Over the course of the project, faculty tried out and evaluated about 10 software programs

and selected four for use in DHS. More detailed data from pre- and post-tests will be reported in the model project's final report.

Provide mathematics teachers with instructional designs incorporating technology.

As part of district in-kind contribution to the CAPP–Eisenhower project, the district supported purchase and installation of the computer lab with its own funds, even though the final cost for equipment and remodeling was significantly greater than the original estimates. The computer lab is completely installed and in active use across the mathematics department. About 700 students per week used the lab during the 1991 spring semester. The lab is used both for individual mathematics classes and for general individual student practice and assistance.

Provide undergraduate mathematics majors with opportunities for early field experiences.

Nine CSUB mathematics majors have participated regularly in the project. They have observed classes, participated in some of the project workshops, and kept journals of their experiences. In addition, their participation in the project has provided opportunities for a closer working relationship with the CSUB faculty participating in the project and collaborative staff development. Three undergraduates have earned 30 hours each of early field experience as part of their project participation.

Outcomes Related to Research Questions

Model Partnership Level

The active working relationship between DJUHSD and CSUB became stronger as a result of the decrease in numbers of partners and the more intensive, regular work with a smaller number of mathematics faculty. Although delays in implementing the computer lab were frustrating for all the participants, working closely together to adapt the project plans and activities also helped strengthen the mutual ownership among the participants.

Organizational Level

Department: There is greater cohesion among mathematics faculty. Faculty have taken a departmental focus on their work and staff development in contrast to the previous individual, often isolated, focus of each teacher. There also is greater collegiality and cooperative learning among mathematics faculty with active shared learning between/among the four new and five experienced teachers. Experienced teachers are increasingly willing to learn from new teachers.

Faculty now are providing inservice for one another based on external workshops they have attended on related topics such as computer use in mathematics classes.

School: In 1991-1992, the mathematics and science departments are working together to share their scarce resources and to find additional external resources such as new grants for projects.

Individual Level

Students and teachers are enthusiastic about use of the computer lab and about perceived impact on increased student learning.

Mathematics faculty have become self-directed about using the computer lab, adjusting scheduling to meet student needs.

The CSUB project co-director has increased collegial interaction with his own undergraduate students, emphasizing joint learning in his formal courses as well as in project-related activities.

Institutionalization

Math A was implemented in fall 1991 and will be institutionalized as a DHS course.

The computer lab and use of computers in all mathematics classes will continue indefinitely. Faculty will continue to evaluate mathematics software in order to provide alternatives to students and faculty.

DHS mathematics faculty will continue to upgrade their skills in mathematics and in various instructional strategies they have learned during the project (e.g., cooperative learning). DHS and CSUB will continue working together in related mathematics activities and projects. The CSUB co-director will continue formally as a curriculum consultant to the district. Other CSUB mathematics faculty will continue working with DJUHSD informally. The district superintendent (the district co-director for the project) and the CSUB faculty co-director also want to continue providing preservice field experience options for undergraduate mathematics majors.

Institutionalization is supported by the district's general funds and by applicable federal funds such as Chapter 1.

Bridges to the Future: A Professional Development Partnership to Improve Teaching & Learning in Science #26

Samuel Merritt College
Oakland Health Academy & Oakland Technical High School (Oakland Unified School District)

Other Participants: Saint Mary's College of California, Merritt Community College, Laney College, Lawrence Berkeley Laboratories, Bay Area Bioscience Center, University of California Berkeley (Professional Development Program), California State University, Hayward, Bay Area Science and Technology Education Consortium, East Bay Consortium of Educational Institutions

Priority Areas: Life science, especially integrating biomedical knowledge and applications and developing thematic strand approaches across the curriculum; supporting mathematics component with collaborative group workshop methods and conceptual/visual/inquiry approaches

Target Teachers: 9 science teachers and 5 mathematics teachers in Oakland Health Academy and Oakland Technical High School

Target Students: primary impact: 185 OHA students in 1990-1991; secondary impact: 1,600+ OTHS students

Project Goals

- Improve teaching and learning in science and mathematics.
- Improve OHA faculty understanding of problem-based learning and strategies for integrating biomedical applications across the curriculum.
- Provide effective model of intersegmental professional development.
- Evaluate, institutionalize and disseminate project activities, products, results.

Need for Change
- cycle of OHA student failure
- student inability to use concepts, logical reasoning, generalization
- limited OUSD staff development in secondary science
- faculty need and desire for collegial learning and hands-on experiences

Staff Development Model: grass-roots driven; linked to educational goals of OHA, OTHS and OUSD; intensive training plus follow up emphasizing group learning, hands-on applied teaching strategies

Change Measurement
- 80 percent of participants show increased knowledge, understanding, and use of biomedical applications, problem based learning, etc.
- 80 percent of participants show increased knowledge and understanding of restructuring and aligning curricula with frameworks
- science department will have developed a plan and begun restructuring curricula
- science department and OHA will have begun aligning curricula with new frameworks
- OHA will have begun integrating biomedical applications across curriculum
- partners will have institutionalized activities and continue beyond June 1991
- successful dissemination of activities, products, results

Changes from Previous CAPP Project

- nine networking organizations added through membership on project advisory board and participation in other multi-organization efforts such as the Bay Area Science and Technology Education Consortium (BASTEC)
- fewer OHA and OTHS faculty, from 48 to 14
- fewer college faculty, from 44 to 7

Outcomes Related to Project Goals

Improve teaching and learning in science and mathematics.
Participating faculty report considerable improvement in their overall teaching as a result of increases in their knowledge about problem-based learning and in incorporating biomedical applications across the OHA curriculum. Faculty also report that students show increased interest in topics and subject areas in which biomedical applications have been implemented, better understanding of important concepts, and increased competence in using hands-on laboratory equipment and materials. The co-directors note that, although the most visible impact is on the students directly involved in the OHA courses, the OHA faculty also teach students and courses across the high school so that all students in their courses are benefiting from the improvements in faculty knowledge and skills.

Improve OHA faculty understanding of problem-based learning and strategies for integrating biomedical applications across the curriculum.
Virtually all the faculty participants report demonstrable improvements in their understanding of problem-based learning. They attribute this largely to the way they themselves learned this instructional strategy. That is, they learned by doing. In the intensive professional development workshop, they were engaged in the problem-based approach as students would be and were able to rediscover for themselves the view of science as a discovery process. They have seen this view as critical in helping them introduce students to the discovery process.

Although both the science department and OHA have begun work on restructuring curricula and aligning it with the frameworks, they are not well pleased with their progress. They have encountered more barriers than they expected, especially in locating additional curriculum materials appropriate to the OHA purposes and in coordinating their efforts with the district's alignment efforts. Nevertheless, faculty have restructured the sequence of biology courses and restructured and added topics in existing courses. In addition, they have added a conceptual physics course and an advanced biology course for 1991-1992. In the mathematics department, Math A has replaced pre-algebra and is intended to replace general mathematics over the coming year.

Provide effective model of intersegmental professional development. Participants have found the OHA–SMC approach or model very effective for their particular circumstances, that is, working with students in an applied career curriculum that supplements the regular high school curriculum. In addition to following a sound general model of professional development, the OHA–SMC model has added two elements that distinguish it from the other projects.

One is the use of an advisory board with representatives of local-area colleges and universities with programs for which OHA students are preparing themselves. The advisory board has provided ongoing advice and feedback about the relationship of the project goals and accomplishments to preparing students for attending such programs. Members also have assisted OHA faculty in finding summer internships for students and sometimes supervising the students. This has increased direct student access to career-related experiences. It also has increased the interest and ties between OHA and the organizations represented on the advisory board.

The other element is referred to as joint professional development. The project arranged several workshops and seminars in which both secondary and postsecondary faculty participated together as learners with the session leaders coming from outside the project. Both sets of faculty reported this experience as helpful in reinforcing their peer relationships and in providing them with new learning in common which they continue to explore as colleagues both in and out of the project activities.

Evaluate, institutionalize and disseminate project activities, products, results.

The OHA–SMC model project has conducted an extensive internal evaluation of changes in faculty knowledge and application of problem-based learning and biomedical applications. Detailed data on the changes is included in the project's final report. Institutionalization is discussed at the end of this summary.

Partnership co-directors and faculty participants have been enthusiastically active in disseminating information about the partnership itself, their approach to professional development, and the materials they have developed for use in mathematics and science courses in OHA and OTHS. They provide regular formal reports to the project's advisory committee which includes representatives of nine regional colleges and science-related organizations. In addition, they make frequent informal presentations as part of their participation in other consortia such as BASTEC. Individual faculty participants also often provide informal presentations in the numerous workshops, seminars and conferences they have attended as part of their partnership activities.

Outcomes Related to Research Questions

Model Partnership Level

The partnership activities continued to expand both in active participation by new organizations and in providing new professional development opportunities such as: a molecular biology institute with CSU Hayward; a workshop series with Lawrence Berkeley Laboratories; a districtwide professional development conference for 300 K–12 science teachers cosponsored with BASTEC. In addition to these school-year activities, the project has provided summer 1991 inservice opportunities to some 31 individuals in 13 workshops, seminars, conferences, etc.

Organizational Level

District: Teachers who participated in the summer biotechnology workshops have provided inservice for other science teachers across the district. Teachers who have received intensive training in Math A meet regularly with other district mathematics teachers to continue sharing information and improved classroom applications.

School: CAPP–Eisenhower work has helped the Oakland Health Academy leverage other resources: a grant from IBM to provide 6–8 days of training in classroom applications of IBM mathematics and science software and additional science equipment; assistance from local hospitals in providing training for OHA faculty in biomedical applications in the OHA curriculum, including inservice for faculty and training on biomedical and lab equipment, and continual cooperation in articulating OHA courses, curriculum, and training with requirements for employment in hospital settings.

As a subset of the restructuring and alignment, the Health Academy developed a plan and has begun integrating thematic strands of biomedical applications across the academy curriculum. Such an integrated curriculum is unique in secondary biomedical education. As a result, project staff are disseminating the integrated biomedical curriculum widely and are receiving frequent visitors and inquiries about the content and implementation of the curriculum.

Members of the project advisory board helped provide summer internships for academy students and supervised some of the students. This provided faculty as well as students with more exposure to real-world applications of science and biotechnology and increased understanding of necessary academic preparation for various fields.

Department: The science department attributes its new sense of collaboration and "being a team" to the ongoing inschool communication and collaboration as well as to specific project activities such as the Problem-Based Learning Workshop.

The science department has begun restructuring the scope, sequence, and content of science courses and aligning the curriculum with the new framework.

In both the mathematics and science departments, it has become the norm for individuals who participate in external inservice activities to share the information and training they gain. Teachers have become quite willing to teach and learn with and from one another.

Individual Level

Faculty: Intensive summer activities in four areas prepared summer participants to work directly with their respective departments during the school year to provide peer inservice in the Math A curriculum, collaborative group study in mathematics, restructuring the scope, sequence, and coordination of the science curriculum, and biomedical applications across the science curriculum. This helped improve individual teacher's knowledge and leadership skills as well as contributing to the department's resources.

Teachers who participated in the summer mathematics institute report that they are using problem-solving and cooperative group approaches in their classes.

Teachers who participated in the summer biotechnology institutes became proficient in classroom biotechnology methods and have institutionalized biotechnology applications in their own classes.

Students: Several students who participated in 1991 summer internships gained substantial expertise in application areas such as multimedia, first aid and molecular biology and are providing inservice in these areas to academy faculty as well as fellow students.

In addition, a few students have attended summer institutes and workshops with OHA faculty and have had direct opportunities to learn new or advanced topics and approaches to OHA subjects. However, the broadest student impact has resulted from the implementation of problem-based learning and introducing biomedical applications across the OHA curriculum.

Institutionalization

Institutionalization of the collaborative relationship between the Oakland Health Academy, the Oakland Technical High School and Samuel Merritt College seems assured. The personal and professional relationships of key project leaders and participants have become extremely strong over the life of the two CAPP projects; the collaborative work within the projects clearly serves the needs of the two principal organizational partners; and both see future as well as present benefits from the relationship. The high school and Health Academy gain much needed expertise in health-related content and career applications. For students, this means better preparation for health-related postsecondary education and especially increases the likelihood of their acceptance at Samuel Merritt College. Samuel Merritt College contributes directly to improving the quality of OHA graduates and therefore to an increased pool of qualified potential college applicants.

The project's increasing emphasis on including both SMC and OHA faculty in professional development activities also is providing opportunities for and encouraging a broader set of professional connections and relationships between the two schools. In addition, the project co-directors have become proficient in finding and leveraging other external resources to support project-related work and in increasingly including other organizational participants in these additional activities, thus expanding or diversifying both resources and partners for future activities. Equally important, however, is the college's own commitment to the ongoing collaboration, which is likely to continue as long as the collaborative work clearly meets important college needs.

Science Teachers Improvement Program #27

Las Plumas High School (Oroville Union High School District)
Butte Community College

Priority Area: improvement of physical science instruction at Las Plumas High School

Target Teachers: 6 science teachers teaching all levels of science courses

Target Students: 172 students (grades 9-10) enrolled in physical sciences classes

Project Goals

- Develop model lessons using new framework.
- Develop teaching aids (e.g., videotapes) for science instruction.
- Develop a science professional development program for rural high schools.

Need for Change

- limited science background of many students
- need to prepare students for postsecondary science requirements
- accreditation recommendations: better articulation with feeder schools; additional teaching strategies for 9th grade physical science and noncollege courses; process for ongoing curriculum review and development

Staff Development Model: developing an ongoing staff development process that includes concentrated summer work; new instructional aids; model lessons; database of information from faculty who attend outside staff development events

Change Measurement

- number of model lessons and units developed and implemented
- development and/or acquisition of new teaching aids for all or most units and lessons
- implementation of new, collegial approach to science department professional development and teaching

Changes from Previous CAPP Project

- change of focus from K–12 science and mathematics to secondary science
- fewer partners, from 5 (LPHS, BC, Chico State University and two elementary districts) to 2 (LPHS and Butte College)
- fewer teachers, from 32 to 8
- all Las Plumas science faculty were new to CAPP project work
- fewer college faculty, from 6 to 1
- change in co-directors at Las Plumas High School

Outcomes Related to Project Goals

Develop model lessons using the new science framework.
By September 1991, faculty had revised, reorganized or newly developed 50 lessons in physical science. In addition, they extended the project to biological science and developed three thematic units in biological science. Each of the biology units included multiple lessons.

For each new unit or lesson, there is now a set of instructor materials, including tests, worksheets, lab setups, and audio visual materials to be used in each unit. Creating these unit materials was begun by one faculty member during the first summer of the project and has been continued by the department as a whole throughout the project as new units are completed and existing units are revised.

Faculty now review each unit immediately after it is completed in classes, make any needed revisions in materials, and record the changes on the computer disk. This provides both immediate assessment of the unit and consistently up-to-date information for faculty teaching the course in the future.

Better organized resources, materials and alignment have led faculty to increase their focus on making classes more investigative and lab-oriented, including creating tests that emphasize more hands-on situations than have past paper and pencil tests. Students have responded well to more hands-on work and tests.

Develop teaching aids for science instruction.
In general, faculty now have both more and better-organized resources. All of the information for each new unit has been cataloged on computer disks for referencing and updating. One teacher also has reviewed, evaluated, organized and cataloged on computer disk the existing videos in both the school and the county media center.

Early in the project, faculty developed a summary form that each now uses to report on any conference, inservice or workshop that the individual attends. This helps faculty stay informed about who has recent information, materials, or new contacts that might be useful to others.

Incorporation of new technology across all courses and classes is enhancing the development of the written curriculum units and organization of resources. Although not all the equipment was purchased with CAPP–Eisenhower funds, the CAPP–Eisenhower project has provided the time for faculty to learn to use the equipment and to integrate its use into their courses. The new equipment includes a laser disc, computer programs, a liquid crystal display (LCD) for computers, television and video players, and microscopes connected to the computer.

Develop a science professional development program for rural high schools.
Although the faculty has not produced a separate, written description of the professional development they have created, their approach to professional development could constitute a model program for rural schools.

Outcomes Related to Research Questions

Model Partnership Level

Although the collaboration with Butte College has not become as strong as intended in the original proposal, individual faculty and the department chair have maintained ongoing contact with the key Butte College representative. This has resulted in increasing communication and assistance in identifying Butte resources and expertise that have been used developing the human anatomy and physiology course that is being taught at Las Plumas for the first time in 1991-1992.

One outgrowth of the project's emphasis on collaboration and the ties with Butte College has been to establish ongoing ties with Chico State University science faculty. During summer 1991, a new Las Plumas faculty member worked out an exchange of laser equipment with Chico State and arranged a student field trip to see demonstrations of laser use. While Chico State has not become an official partner in this project, Las Plumas faculty expect to cultivate these new ties with Chico State faculty and look for future opportunities to collaborate.

Organizational Level

District: The science curriculum revision cycle begins in the 1991-1992 school year. The Las Plumas science faculty feel that their CAPP–Eisenhower work will allow them to contribute significantly to Oroville Union High School District's overall curriculum improvement. Not only do the faculty have a better understanding of the state framework, they also have a clearer sense of student needs in the various areas and immediate experience with designing and using hands-on laboratory setups for teaching and testing.

Department: There have been dramatic increases in department cohesion and collegiality resulting in departmental rather than individual focus on courses and curriculum. There are now regular meetings to conduct departmental as well as project work. In effect, the project work has become the department work so that project meetings are departmental meetings and vice versa. The science faculty now meets as a department on some school staff development days to conduct their own science staff development rather than spend the entire day in schoolwide meetings. This change has provided additional blocks of time to share information and continue curriculum alignment work.

Faculty have increased coherence and alignment/articulation within and across courses both within physical science and biological science and across the two areas.

Individual Level

Faculty: Teachers reported a much smoother, more organized start to the 1990 school year due to summer 1990 work on alignment and preschool meetings to review accomplishments and resources organized during the summer. The new teacher especially found this helpful, not only for simply learning school and department logistics (such as where storage areas are) but also for becoming familiar with all the department resources and being included in department activities well in advance of beginning classes. Similar activities and processes took place during summer 1991 with similar positive responses from faculty, and again especially from the new teacher for 1991-1992.

All six teachers have reported much increased enthusiasm for their own teaching and for the new collegial and departmental approach to their work. They also report increased content knowledge and increased and improved teaching strategies due to ongoing discussions, opportunities to try out new approaches, and also to having the science resources well organized and easily available.

Students: Teachers report that students are showing more interest and enthusiasm for the science courses, which teachers attribute to their own increased enthusiasm, skills, hands-on resources and new equipment such as the laser discs.

Students are asking to see more demonstrations and are more active in class participation and discussions. They also come in after school to work on their own with the lab setups and other new resources such as computer programs and computer microscopes.

Institutionalization

What has changed most due to the CAPP–Eisenhower project is the way Las Plumas science faculty work together as a department team to create and improve their own curriculum and support resources. These changes in behavior and processes within the department are expected to continue indefinitely. Although other improvements, such as new equipment, will be a permanent part of the department's inventory, it is the fundamentally different approach to teaching science and working together that will have the most long-term impact for both teachers and students.

Endnotes

Dr. Cates' complete final report is available from the California Academic Partnership Program, Office of the Chancellor, The California State University, 400 Golden Shore, Long Beach, California 90802-4275. This study was supported by the California State University Foundation with funds from the Dwight D. Eisenhower Mathematics and Science Education Act (PL 100–297) State Grants Program, which is administered in California by the California Postsecondary Education Commission. However, the contents do not necessarily represent the views or policy of the California State University Foundation, CPEC, or the federal government.

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CAPP—Eisenhower Project Contact List

CAPP–Eisenhower Statewide Project

Deborah O. Hancock, Director
The California State University
Office of the Chancellor
400 Golden Shore, Suite 132
Long Beach, CA 90802-4275
(310) 985-2608

Middle School Mathematics Project (#8)

University of California, Santa Cruz—
Pajaro Valley Unified School District
(UCSC–PVUSD)

Edward Landesman, Co-Director
359B Applied Sciences Building
University of California, Santa Cruz
Santa Cruz, CA 95064
(408) 459-2423

Tom Karwin, Project Coordinator
University-School Programs
University of California, Santa Cruz
Santa Cruz, CA 95064
(408) 459-2208

Math/Science in Pasadena (#22)

California State University, Los Angeles—
Pasadena Unified School District
(CSULA–PUSD)

Myron Gee, Co-Director
Education Center
Pasadena Unified School District
351 South Hudson
Pasadena, CA 91109
(818) 568-4574

Chogallah Maroufi, Co-Director
School of Education
California State University, Los Angeles
5151 State University Drive
Los Angeles, CA 90032
(213) 343-5115

Partnership to Improve Teacher Competencies in Mathematics (#23)
California State University, Bakersfield—Delano High School
(Delano Joint Union High School District)
(CSUB-DHS)

Donald M. Fairbairn, Co-Director
Department of Mathematics
California State University, Bakersfield
Bakersfield, CA 93311-1099
(805) 664-2227

Sherrill A. Hufnagel, Co-Director
Delano Joint Union High School District
1747 Princeton Street
Delano, CA 93215
(805) 725-4000

Bridges to the Future: A Professional Development Partnership to Improve Teaching and Learning in Science (#26)
Oakland Health Academy and Oakland Technical High School
(Oakland Unified School District)—Samuel Merritt College
(OHA-SMC)

Patricia A. Clark, Co-Director
Oakland Health Academy
Oakland Technical High School
4351 Broadway
Oakland, CA 94611
(510) 658-5300

Lily Mow, Co-Director
Samuel Merritt College
370 Hawthorne Avenue
Oakland, CA 94609
(510) 420-6011

Danetta Taylor, Project Administrator
Samuel Merritt College
370 Hawthorne Avenue
Oakland, CA 94609
(510) 420-6011

Science Teachers Improvement Program (#27)
Las Plumas High School (Oroville Union High School District)—
Butte College
(LPHS–BC)

Nancy Negri, Co-Director
Mathematics Department
Las Plumas High School
2380 Las Plumas Avenue
Oroville, CA 95966
(916) 533-1301

Marla Vaughn, Co-Director
Science Department
Las Plumas High School
2380 Las Plumas Avenue
Oroville, CA 95966
(916) 534-5617

Afterword

Deborah Osen Hancock
School of Human Development and Community Service
California State University, Fullerton

Beyond the Handshakes brings into existence a body of literature which focuses on the next generation of school–university partnerships, or "synergistic collaborations," as the book's editor Tom Karwin calls them.

Up to now much of the academic partnership literature has focused on strategies for establishing collaborations and maintaining them in the early stages. When the California Academic Partnership Program (CAPP) proposed "Partnerships for Staff Development in Science and Mathematics" as a Dwight D. Eisenhower Mathematics and Science Education State Grant, it saw a need to go beyond math-science staff development, the primary purpose of the grant, to study experienced partnerships as they launched into new joint projects.

As a result, the 1990-91 statewide project, labeled CAPP-Eisenhower for short, combined the efforts of five model partnerships to:

- advance the professional development of secondary science and mathematics teachers of underrepresented students;
- disseminate the experience gained to CAPP and to other intersegmental programs supporting improvements in math and science and in professional development;
- enhance and encourage the development of present and future academic partnerships.

As I reviewed the *Beyond the Handshakes* manuscript, I found reflected in it the dreams, experiences, and frustrations of key personnel in the project—directors of the model partnerships, the editor of this publication, the external evaluator, and me, the project's statewide director—all of whom have five or more years' firsthand experience with school–college partnerships.

Dreams

The dreams are easy. They are laid out concisely in the Cates article, "Outcomes and Issues of the 1990-91 CAPP-Eisenhower Project." They include both the overall dreams of what the statewide project could accomplish (found at the beginning of the article) and the site-specific dreams revealed in the goals for each model project (Part II of her article).

These dreams grew out of three-to-five years' experience as CAPP projects which project personnel brought to the CAPP-Eisenhower grant. Many of them also brought experience from other partnership activities.

The project leaders were veterans of what Lou Albert terms the "partnership terrain." The Brookhart and Loadman article on school–university collaboration as multicultural education strikes a responsive chord in these experienced project leaders. They know it's true—they've grappled with the "culture gap" in five different settings, and they built their project dreams on the reality they found.

Project leaders took a careful look at the literature on staff development in general and in mathematics and science in particular before they articulated their model partnership goals. They also pooled information on educational equity issues and took time to think seriously about it. Their dreams and partnership goals were further refined at the three-day fall 1990 *Beyond the Handshakes* Conference where they participated in lively dialogues on these topics with conference speakers like Eugene Garcia and Elizabeth Stage.

Model project leaders also based their dreams on their experience as change agents in their schools and universities. It is particularly interesting to note that all five model partnerships built projects which took into consideration the policy implications for improving educational practice identified by McLaughlin:

- focus on systemic reform, rather than special projects;
- integrate reforms of process and content, and professional development;
- build on established priorities and directions;
- look beyond removing obstacles to the enabling of effective practice;
- use teachers' perspectives as guides to policy.

The case studies of the partnerships found in the Cates article reveal many examples of ways in which the model projects anticipated McLaughlin's conclusions.

Experiences

The activities of the statewide CAPP-Eisenhower project are well outlined in the Cates article. They are as diverse as the geographic and academic settings in which the model partnerships functioned and as different as conducting an action research project on partnership effects is from producing this publication. Yet they all addressed the purposes of the grant outined above. Further, they addressed at a grassroots level what Frank Young termed "the myth that achievement, especially in math and science, is solely dependent on ability."

My reading of the manuscript for this publication shows that the experience of CAPP-Eisenhower key personnel would tend to support the conclusions of the authors presented here. In realizing the dreams of the overall project and those of the model partnerships, we encountered many of the challenges the authors identified. We learned from those experiences and welcome this opportunity to share those learnings with you.

My special thanks to Tom Karwin for his efforts to show how each of the articles relates to experienced partnerships. The model project leaders are indebted to him and project evaluator Carolyn Cates for the thoughtful conversations they engaged us in at each of our meetings.

Frustrations

As fulfilling as our experience has been, I believe that as spokesman for the CAPP-Eisenhower project, I would not be honest if I did not share some of our frustrations with you.

Partnership Research Agenda. One of the purposes of the *Beyond the Handshakes* conference was to identify research questions which could be addressed in this grant. We came away from the conference with pages of questions contributed by participants throughout the conference. Many of them dealt with important questions which could not be explored due to the brevity of the project. Probably of greatest interest were questions of the long-term impact of the model project staff development on teachers and their students. The questions deserve a careful analysis. They suggest a partnership research agenda which should be studied and implemented on a broad scale.

School–Business–University Partnerships. One of the model projects, the Oakland Health Academy, was extremely successful in adding business and industry representatives to its academic partnership during the life of the grant. The other projects were also interested in adding business partners and used the Health Academy as a resource. They soon became aware of the absence of systematic technical assistance to projects wanting to add corporate partners and of research which explores what happens when business joins an academic partnership. The Newman article and Rigden articles make strong cases for such collaborations, but study and help are needed to make them a reality.

Changes in the Postsecondary Partner. So many academic partnerships focus exclusively on the impact of their work on the public schools. Yet the CAPP-Eisenhower experience suggests that changes at the postsecondary level can also happen—changes in instructional practice and course content, in teacher education fieldwork activities, and in institutional policies. It seems reasonable to expect these changes to occur if a true collaboration is at work. A real effort needs to be made to design projects which explicitly address the expectation that such changes will occur and then to study and report on the results.

Role of Teacher Education in Academic Partnerships. Much emphasis has been placed in academic partnerships around the country to directly involve university faculty from mathematics and science departments in planning and implementing partnership activities. Much has been gained by their involvement.

However, as a result, the involvement of teacher education faculty in these partnerships has often diminished. CAPP-Eisenhower project personnel gave this issue considerable thought. They saw the need to involve teacher educators, not only for their knowledge of curriculum and instruction, but because they felt teacher educators could benefit from participating in collaborative staff development activities, ones in which teachers work side by side with university faculty to identify staff development needs and address them.

Yet not all the model projects included teacher educators. Those which did not are concerned now that some of their findings will not be impacting local teacher education. They fear that teacher candidates are not seeing models of school–university partnerships as part of their training.

Perhaps this explains why we have included so many articles in this book about the partnership role of teacher education. Since several of the model partnership schools were in the process of restructuring, the Rigden article was of special interest. The articles on professional development schools suggest another avenue for involving teacher educators. Current and future partnerships need to consider the implications of these articles carefully, and bridge the "culture gap" which too often exists between teacher educators and their colleagues in fields like mathematics and science.

Institutionalization. CAPP-Eisenhower project personnel struggled with the notion of institutionalization; in fact, they continue to do so even as this is being written. They do not like the term, believing that it is a misnomer which connotes that project outcomes will *permanently* become a part of the "way things are done" in their respective schools and districts. Yet precisely because of the change agent experience they have had, these leaders recognize that their project outcomes suggest further changes that are needed.

Model project leaders have also noted the broad range of outcomes, both intended and unintended, of their projects. They believe that the term which will replace "institutionalization" will need to take in a wide range of possibilities for making these activities ongoing functions of the school. They appreciated the opportunity the CAPP office gave them to consider this question with current CAPP project leaders.

In conclusion, I would like to thank the editor and authors of the articles in *Beyond the Handshakes* for helping the CAPP-Eisenhower project personnel in their quest to provide quality staff development for math-science teachers of underrepresented students. They moved our thinking forward as they grappled with issues we care deeply about. It is our hope that these articles will also ring true to other experienced partnerships around the country and that their leaders will find the articles as provocative as we have. We look forward to continuing the partnership conversation with you.

About the Authors

Nancy E. Adelman
Policy Studies Associates, Inc.

Louis S. Albert
Vice President, American Association of Higher Education

J. Myron Atkin
Stanford University

Susan M. Brookhart
Duquesne University

Carolyn S. Cates
Program Director, Far West Laboratory for Educational Research and Development

Mark Edelstein
Executive Director, Intersegmental Coordinating Council

Phyllis J. Edmundson
Boise State University, Idaho

Eugene Garcia
University of California, Santa Cruz

John I. Goodlad
Director, Center for Educational Renewal, University of Washington

Deborah Osen Hancock
The California State University, Fullerton; Past Statewide Director, California Academic Partnership Program

John Harvey
The University of Wisconsin–Madison

Christian Hirsch
Western Michigan University

Thomas Karwin
Coordinator of University–School Programs, University of California, Santa Cruz

Theodore Kowalski
Ball State University

Mary Montgomery Lindquist
Columbus College

William E. Loadman
The Ohio State University

Milbrey W. McLaughlin
Stanford University

Frank Newman
President, Education Commission of the States

Joseph Oakey
Manager, Education Department, Autodesk, Inc.

Diana W. Rigden
Director, Precollege Programs, Council for Aid to Education

Kenneth A. Sirotnik
University of Washington

Jane A. Stallings
University of Houston

Frank Young
Statewide Director, California Academic Partnership Project

The author's titles and affiliations listed were current as of the date of their contributions to this book.